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SUMMER IN THE ANTARCTIC REGIONS

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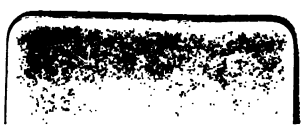

Engraved by W. Hughes.

SUMMER

IN

THE ANTARCTIC REGIONS;

A NARRATIVE OF

VOYAGES OF DISCOVERY TOWARDS THE SOUTH POLE.

With a Map of the Antarctic Regions.

PUBLISHED UNDER THE DIRECTION OF
THE COMMITTEE OF GENERAL LITERATURE AND EDUCATION,
APPOINTED BY THE SOCIETY FOR PROMOTING
CHRISTIAN KNOWLEDGE.

LONDON:
PRINTED FOR THE
SOCIETY FOR PROMOTING CHRISTIAN KNOWLEDGE;
SOLD AT THE DEPOSITORY,
GREAT QUEEN STREET, LINCOLN'S INN FIELDS;
AND 4, ROYAL EXCHANGE.
1848.

LONDON:
R. CLAY, PRINTER, BREAD STREET HILL.

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INTRODUCTION.

In a little volume, entitled "Winter in the Arctic Regions," to which the present work is intended as a supplement and companion, a general view is given of the progress of Arctic discovery, together with descriptions of the different phenomena of nature, and the various contrivances of man during the long night of an Arctic winter. From a very early period in the history of our navigation, those regions have been an object of curiosity and research, connected as they are with the great problem of a north-west passage, and offering a wide field for the enterprise of whale-fishers and fur-hunters.

While the Arctic* Regions have been thus diligently explored, those within the Antarctic circle have been almost entirely neglected till within a recent period. It was supposed by the older geographers, that in order to balance the land of the northern hemisphere, there must be a great southern continent, equal in extent and fruitfulness to any of those already known. Cook first ascertained the fact, that in any temperate or even habitable latitude, no such continent exists. The extreme intensity of cold was even found to commence at a much lower latitude than in the northern hemisphere. In the Arctic seas, for example, large floating masses of ice are scarcely met with until we arrive at the 70th degree of latitude, nor the stationary fields, until towards the 75th or 80th degree. In the Antarctic seas, on the contrary, both occur at from 50° to 60° of southern latitude. In the island of Terra del

* The word *Arctic* is derived from the Greek, and signifies *of or belonging to the bear* (αρκτος), meaning the constellation of *that name*. *Antarctic* means, opposite to arctic.

Fuego, in that of Sandwich, and in several others situated towards the 54th and 59th degrees of south latitude, the mountains even in the southern summer remain covered with snow quite to the shores of the sea.

This contrast has been ascribed to the shorter stay which the sun makes in the southern hemisphere than in the northern. But this difference, amounting to scarcely eight days, has been proved to be exactly compensated by the greater nearness of the earth to the sun during the southern, than during the northern summer. Another cause must therefore be sought, and as it is a fact, that water becomes less heated by the same amount of sunshine than any solid substance, this cause will be found in the vast extent of the Antarctic seas, the total absence of any great surface of land, and the form of the continents which terminate towards the south almost in points, thus opening a free and unencumbered field to the currents from the polar seas; and allowing them to push forward the icy masses in every direction

from the south pole towards the southern and temperate zone. There some of them accumulate, and are stopped by getting entangled with each other; some are hindered from advancing further by the force of the general movement of the ocean towards the west; and some melt by the action of the sun. As there is no fixed limit where the motion of the polar waters towards the equator stops, so there is no determinate boundary for the southern ice. Accordingly, navigators have met with icebergs and packs of ice towards the 50th degree, and sometimes have advanced 10° nearer the southern pole, and met only with inconsiderable floating pieces. These variations of their latitude under the same meridian, seem to support the explanation offered by Malte Brun, founded on the results of Captain Cook's voyages. These moveable masses of ice, propelled on all sides by the polar currents towards the tropic of Capricorn, are stopped in their progress only when they meet with currents which set to the *west, and which,* as they draw them along, impart

to them a compound motion—a motion which, being modified by the equatorial current, makes them describe a spiral line until they melt. They are thus brought into a region otherwise temperate, where their presence causes those sudden transitions from hot to cold, and those extensive fogs which are spoken of by navigators.

In adopting this explanation, we are under no necessity of supposing the quantity of southern ice to be so enormous as it was formerly stated to be; for this ice, which appears towards the 50th and 60th degrees of latitude, would form but a very small part as to quantity, when compared with a single mass of fixed ice around the pole; indeed, it would consist of only a girdle or belt of variable thickness, behind which there might be found vast expanses of sea, which from time to time would contain no ice. It will be seen from the following narratives, how admirably this view of the great geographer, stated many years ago, has been borne out by recent events.

It is scarcely necessary to remind the reader,

that from the position of the earth with respect to the sun, the winter in the arctic regions corresponds with summer in the antarctic regions. When the arctic circle is enlightened during the whole diurnal revolution of the earth, and the summer is one long day, the antarctic regions are involved in constant night. The regions adjacent to the arctic circle will, during a part of the earth's revolution, come into the dark hemisphere, but they will continue much longer in the illuminated hemisphere; and, therefore, between the arctic circle and the equator, the days will be longer than the nights. At the equator, the days will be exactly equal to the nights; and between the equator and the antarctic circle, the nights will be longer than the days. On the 21st June (the summer solstice) the arctic circle is completely within the enlightened hemisphere. On the 21st September (the autumnal equinox) the days and the nights are equal in every part of the world; that is, the sun is twelve hours above the *horizon and twelve* hours below it. On the 21st

December (the winter solstice) the whole of the arctic circle is in darkness, and the parallels in the north of the equator are as much in the dark as they were in the light on the 21st June, the winter nights being as long as the summer days, and the winter days as long as the summer nights. On the 21st March (the vernal equinox) the boundary of light and darkness, passes through both poles as on the 21st September; and the days and nights are again equal all over the world.

In the southern hemisphere, the autumnal equinox (21st September) corresponds with our vernal equinox (21st March), so that our autumn is their spring, and their spring is our autumn. So also, the summer solstice (21st June) corresponds with the winter solstice (21st December), so that our summer is their winter, and our winter is their summer. Midsummer-day with them is, in fact, mid-winter with us.

As one of the chief objects of all polar expeditions is to investigate the laws of terres-

trial magnetism, it will be advisable here to explain briefly the nature of this very useful inquiry.

The reader is of course aware that magnetism is a peculiar quality possessed naturally by one kind of iron ore called *loadstone*, and capable of being produced artificially in iron and steel by certain processes which, without altering any of their other qualities (such as their weight, hardness, &c.), give them certain additional properties, of which the most obvious is that of *attracting*, and in some cases *repelling*, other bodies; but the most useful is that of *pointing in a certain direction* when allowed to move freely. The attractive power of the magnet was known in Europe as a mere curiosity many ages before the introduction of the knowledge of its direction, which led to the discovery of the New World, and all the inestimable benefits resulting from the extension of navigation. It is manifest, therefore, that the success of that art must mainly depend on the *extent of our* knowledge of the laws of magnetism,

which are still very far from being satisfactorily understood, and the following remarks will show why this knowledge is chiefly extended by polar expeditions.

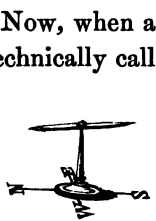
The *directive* property of magnets is so intimately connected with, and dependent on, their *attractive* property, that we must first devote a few words to the latter.

The power of attracting common iron or steel is not displayed equally by all parts of a magnet. If a *natural* magnet or *loadstone* be dipped into iron filings, they will not adhere to its whole surface, but chiefly to certain spots, of which there are never less than two. So also an *artificial* magnet (which is always made in the form of a long bar, either straight or bent) shows no attractive power at its middle, but the power is strongest at its two ends.

Although both ends attract equally, they possess a certain opposition of properties which is called *polarity*, and on this account the two ends are called the *poles*. This opposition may be

observed by means of two artificial magnets, in which the maker usually distinguishes one end from the other by placing a notch or other mark. Now, if the *marked* end of one magnet be presented to the *unmarked* end of the other, they will attract each other twice as strongly as either of them would attract common iron; but between two similar poles (whether both *marked* or both *unmarked*) there is no attraction, but on the contrary a *repulsion*, which, however, being weaker than the attraction, is not generally perceived unless one of the magnets be either floating or suspended by a fine thread attached to its centre, or poised upon a fine point by means of a small cup inserted into its centre.

Now, when a straight and slender steel magnet (technically called a *needle*) is poised in the latter way, as shown in the annexed figure, and is out of the influence of any other magnet or piece of iron, it always takes a certain position in preference to any other,



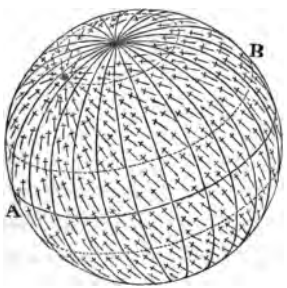
and this position is the same for all needles at the same place. Thus all the magnetic needles in London that are not disturbed by wind or other forces, are now pointing with the marked end twenty-three degrees west of north, and of course the other end twenty-three degrees east of south, or nearly so. Their position varies by small fractions of a degree at different hours of the day, and different seasons of the year, and also undergoes a very slow, but continual change from year to year; all these changes being subject to laws of great complexity, which are as yet very little understood.

We see, then, that though the needle of a compass is commonly said to point north and south, such is not now the case in London, nor has it been so since the year 1658. Before that year the marked end of the needle pointed eastward of north, and ever since it has pointed westward, but this westerly *variation* (as it is called) reached its maximum, which was about 24½°, in 1815, and is now diminishing, that is, the needle is slowly

reapproaching the *true meridian*, or north and south line.

Now, the amount of this magnetic variation is very different at different places; and over one half of the world it is easterly instead of westerly. It becomes therefore of the highest importance to navigation that its exact amount, and the laws by which it may be calculated at different spots, should be known.

The accompanying engraving will give a rough idea of the various directions which the needle assumes in different parts of the world. It will be seen that there are very few places where it lies on the meridian, (or north and south,) as at A and B; for while the meridians all tend to two points or poles, (the ends of the earth's axis,) the



DIRECTION OF THE MAGNETIC NEEDLE IN VARIOUS PARTS OF THE WORLD.

directions of the needle, or *magnetic* meridians, tend to two other points, only one of which is seen in the figure, marked by a black spot. This point, which is about 19° from the north pole, in the direction of Hudson's Bay, has been reached by Captain Sir James Clark Ross. The other, or south magnetic pole, is in the newly-discovered continent of Victoria Land, and has been approached within 160 miles. (See Map.)

On approaching either of these points, the needle must obviously vary greatly from the meridian, and change its direction very rapidly. At the magnetic pole itself the needle shows no tendency to point in any particular direction, and between this and the true pole, the variation becomes more than 90°, so that the marked end of the needle, commonly called its north pole, becomes the southernmost.

The earth, then, influences all the magnets on its surface precisely as if it were itself a great magnet, having its unmarked pole north of Hudson's Bay, and its marked pole in Victoria

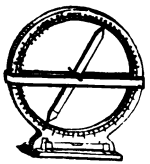
Land; but this huge magnet, like all natural loadstones, has its power very irregularly distributed, so that the direction of the needle at any spot can only be *exactly* found by experiment; and lines passing through all the spots where it has the same direction, or *lines of equal variation*, are not regular curves, but extremely complex and irregular ones. The *line of no variation* too is not, as might be supposed, a regular meridian, but a waving circle, passing through both the true poles and both the magnetic poles. In 1658 this line must have passed through England, but since that time it has shifted westward about a quarter of the earth's circumference, so that it now passes through the two American continents, and England is left nearly as far from it as possible. The other half of this line passes through Australia and China, and is gradually approaching us as the American line recedes from us; so that the magnetic poles seem to have a very slow westward revolution round the true poles of the earth.

But if the directive tendency of the needle

arises from its poles being attracted by those of the earth, it is plain, from the rotundity of the earth, that its poles will not pull those of the needle *horizontally* but *downwards*, so that the needle cannot tend to be horizontal except when acted on by both the earth's poles *equally*, that is, when it is midway between them. When nearer the north magnetic pole than the south, its north or marked end must be pulled downwards; and the contrary when it is nearest the south pole. Accordingly, a needle which was accurately balanced on its support before being magnetized, will no longer balance itself when magnetized, but (in this country) its north end will *dip*, or seem the heaviest; and this has to be corrected in ships' compasses by a small weight attached to the southern half, which weight has to be removed on approaching the equator, and shifted to the other side of the needle when in the southern hemisphere.

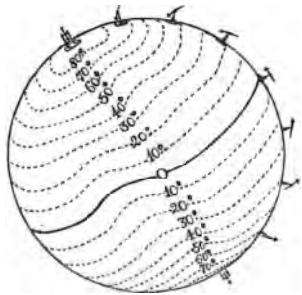
To measure the full effect of this *dip* at any place, needles are made something like the sub-

joined figure, so as to move freely in a vertical plane, instead of a horizontal one, and so nicely balanced as to remain indifferently in any position before being magnetized. The most exquisite mechanism is provided for adjusting their axis perfectly level and at right angles to the common horizontal needle, and for measuring their inclination by a graduated circle.



Now such a needle, in London, dips about 68° from the horizon, the north end being downwards. When carried to either of the earth's magnetic poles it stands upright, but the end which is upward at one pole is downward at the other. The further we go from one of these points, the less does the needle dip, and near the equator it settles horizontally. All these effects will be understood from the annexed engraving. The *lines of equal dip* are much simpler than those of equal variation, and resemble parallels of latitude, only *irregularly waving* as here shown. The *line of*

no dip, or *magnetic equator*, deviates in some places 12° from the true equator; but it is not quite settled whether it crosses that line four times or only twice. Being dependent on the magnetic poles, however, it must, like all the magnetic lines, be gradually shifting westward, and thus the dip, as well as the variation, at every place is constantly changing; that in England, for instance, is very slowly diminishing. This angle, too, suffers very small changes, dependent on the hours and the seasons.



LINES OF EQUAL DIP.

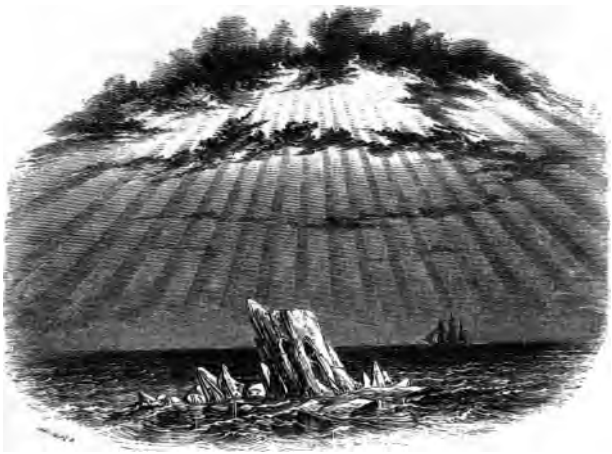
There is yet a third magnetic *element* (as it is called) which is subject to variation both from time and place; namely, the *intensity* of the force by which the needle is pulled into its peculiar position. This *is found* to be generally greatest near

the earth's poles, and least at the line of no dip, but it varies irregularly over the surface; and the importance of investigating its laws will be obvious when we consider that the great and increasing use of *iron* in the construction of ships, must draw their compass-needles out of the true position; and this would lead to error, unless it were nicely calculated and allowed for. Now, the less the effect of the earth's magnetism, the more will the needle be disturbed by the iron on board, so that to make the proper allowance, the variations of the *magnetic intensity* at different spots must be known.

In order to determine the exact amounts and changes of these three magnetic elements, the *direction*, *intensity*, and *dip*, the most careful and laborious observations are constantly made, with instruments of the most exquisite construction, in various magnetic observatories that have been built, either temporarily or permanently, in different distant spots of the globe; and the conducting of similar observations near the magnetic poles

forms one of the main purposes of arctic and antarctic expeditions.

Several particulars respecting the formation of icebergs, floes, &c. and the navigation of icy seas, will be found in the Introduction to "Winter in the Arctic Regions."



AURORA AUSTRALIS.

TABULAR ICEBERG.

CHAPTER I.

SUPPOSED ANTARCTIC CONTINENT—LAND DISCOVERED BY GERRITZ IN 1600—KERGUELEN—COOK CIRCUMNAVIGATES THE GLOBE IN HIGH SOUTHERN LATITUDES—DISCOVERY OF SANDWICH LAND—DETAILED ACCOUNT OF COOK'S PROCEEDINGS.

THE first recorded approach to the *Terra australis incognita*, as the supposed southern continent was called in our maps, was made by one Dirk Gerritz, a Dutchman, in January 1600. His vessel formed part of a squadron destined for the East Indies; and the ships being separated by a furious storm near the Straits of Magellan, Gerritz's ship was driven as far south as the 64th degree of latitude, where he discovered a rocky coast covered with snow, and similar in its aspect to the coast of Norway. For a long time this account was discredited, and it was not till New South Shetland was discovered, more than two centuries later,

that any importance was attached to Gerritz's statement.

In 1769 and 1770, two expeditions were sent out under Captain Kerguelen, for the purpose of exploring the southern regions. The only fruit of these expeditions was the discovery of a considerable group of islands, which received the name of the discoverer; it was also ascertained, that between this group and New Holland no land of any extent was to be found.

About this time, Captain Cook was engaged in that splendid career of discovery, which has reflected so much honour on this country; and it will be interesting to follow his proceedings, so far as they relate to the search after an antarctic continent. On the 22d November, 1772, H. M. ships, *Resolution* and *Adventure* (the former commanded by Captain Cook) left the Cape of Good Hope, in search of a southern continent. On the 6th December, they encountered a gale in lat. 48° 41′ south, and long. 18° 24′ east, during which they lost a great part of their live stock; and the sudden transition from the warm mild weather of the Cape, with the thermometer at 67° Fahr. and upwards, to cold

and wet, with the thermometer at 38°, was felt severely by all on board. The nights were attended by frost and snow. On the morning of the 10th, an iceberg was seen to the west; and the weather becoming hazy, with snow and sleet, the ships were nearly running into another iceberg, which appeared to be about 50 feet high, and half a mile in circuit. "It was flat at top, and its sides rose in a perpendicular direction, against which the sea broke exceedingly high." At daylight in the morning of the 11th, sail was made to the southward, with the wind at west, having a fresh gale, accompanied by sleet and snow. At noon, some white birds were seen, "about the size of pigeons, with blackish bills and feet." On the 12th, the weather was still thick and hazy, "so that we were obliged to proceed with great caution, on account of the ice-islands: six of these we passed this day; some of them near two miles in circuit, and 60 feet high; and yet, such was the force and height of the waves, that the sea broke quite over them. This exhibited a view, which for a few moments was pleasing to the eye; but when we reflected on the danger, the mind was filled with horror; for were

a ship to get against the weather-side of one of these islands when the sea runs high, she would be dashed to pieces in a moment."

On the morning of the 14th, the ships were stopped by an immense field of low ice, studded in different parts with large hummocks. Some on board thought they saw land over the ice, bearing S. W. by S. "I even thought so myself," says Cook, "but changed my opinion upon more narrowly observing these ice-hills, and the various appearances they made when seen through the haze; for at this time it was both hazy and cloudy in the horizon, so that a distant object could not be seen distinct." The ships steered along the north side of the ice-field, in lat. 54° 50′ S., and long. 21° 34′ E. In the course of some hours, they hauled round a point to the SS. W., the sea appearing clear of ice in that direction; but, after running four leagues upon this course, they found themselves embayed; the ice extending from NN. E. round by the west and south to east in one compact body. They, therefore, hauled up east, in order to clear the ice.

Various attempts were made to find a passage to the south, but the ice was everywhere closed.

At noon on the 17th, they were in latitude 55° 16′ south. In the course of the day many whales, one seal, penguins, petrels, and other birds were seen. The skirts of the loose ice were more broken than usual, and extended some distance beyond the main field. Icebergs were very numerous; and in getting clear of the field of ice, which they did next day, they were in danger from these *floating rocks*, as Captain Cook names them. During all this time, the thermometer kept at the freezing point, although it was the middle of summer; the sails were constantly frozen and studded with icicles.

The ice, which impeded the progress of the ships, yielded fresh water; and hence Captain Cook sagaciously inferred, that it must have been formed in bays and rivers to the southward, behind the ice, and that, consequently, the land must lie in that direction. Having now sailed about thirty leagues along the edge of the ice without finding a passage to the south, he determined to run thirty or forty leagues to the east; and if he found no passage to the south, to endeavour to get behind the ice, and thus put the matter beyond a doubt. They continued, therefore, on an

eastward track, sailing through much loose ice. The weather was fair and cloudy; the air sharp and cold, attended with a hard frost; and although this was the middle of summer, the temperature was probably as low as in any part of England, where winter now reigned. The broken ice consisted of flat pieces from four to six inches thick; some, however, were in honeycombed branches like coral-rocks, displaying a variety of figures. At noon on the 29th, the ships were by observation in lat. 59° 12′, and long. 19° 1′ east, which being 3° more to the west than when they first fell in with the ice-field, it seemed pretty clear that this ice did not join the land as was conjectured.

It was now determined to run as far west as the meridian of Cape Circumcision, a distance of about eighty leagues. From the large number of penguins on the icebergs, it was thought by some that land must be near. "This opinion," says Cook, "may hold good where there are no ice-islands; but where such are, these birds, as well as many others which usually keep near the shores, finding a roosting-place upon these islands, may be brought by them a great distance from any land. It will, however, be said, that they must go on

shore to breed; that probably the females were there, and that these were only the males which we saw. Be this as it may, I shall continue to take notice of these birds whenever we see them, and leave every one to judge for himself."

They continued on a westerly course until the 30th, when at midnight, falling in with loose ice, they were obliged to tack and stretch to the southward. On the morning of the 31st, an immense field of ice was discovered extending from N.E. by E. to S.W. by W., farther than the eye could reach. As they were not above two or three miles from this, and were surrounded by loose ice, there was no time for deliberation. They soon got clear, however, after having received several hard knocks from the loose pieces, which were of the largest sort, and among which a seal was seen. In the afternoon they saw the moon, whose face had only once been visible since leaving the Cape of Good Hope. By this a judgment may be formed of the sort of weather which had prevailed. The opportunity was seized to make several observations of the sun and moon. The longitude deduced from them, was 9° 34′ 30″ E., and the latitude was 58° 53′ 30″ S. At sunset the

weather was so clear, that land might have been seen at the distance of fourteen or fifteen leagues, but none was seen. On the next day they were nearly under the same meridian as when they fell in with the field of ice five days before; so that had it remained in the same situation, they must now have been in the middle of it. So large a float of ice as this could not have been destroyed in so short a time; it therefore must have drifted to the northward; and this made it probable that there was no land under this meridian, between the latitude of 55° and 59°, where they had supposed land to lie.

The ships then steered on an E. S. E. course, in order to get more to the south. "We had the advantage," says Cook, "of a fresh gale, and the disadvantage of a thick fog; much snow and sleet, which, as usual, froze on our rigging as it fell, so that every rope was covered with the finest transparent ice I ever saw. This afforded an agreeable sight enough to the eye, but conveyed to the mind an idea of coldness much greater than it really was; for the weather was rather milder than it had been for some time past, and the sea less encumbered with ice. But the worst was, the

ice so clogged the rigging, sails and blocks, as to make them exceedingly bad to handle. Our people, however, surmounted these difficulties with a steady perseverance, and withstood this intense cold much better than I expected."

They continued to steer to the E. S. E. till the 8th January, when they were in lat. 61° 12′ S., and long. 31° 47′ E. They passed a number of icebergs, which had now become so familiar as scarcely to excite notice. From one of these icebergs, which had a quantity of loose ice about it, a good supply of fresh water was obtained. The pieces were hard, and solid as a rock, and some were so large that they had to be broken with pickaxes before they could be taken into the boats. The salt-water which adhered to the ice was so trifling as not to be tasted; and after it had lain on deck a short time, entirely drained off, so that the water which the ice yielded was perfectly sweet and well tasted. Part of the ice was broken in pieces and put into casks; some melted in coppers, and the casks filled up with the water; while some was kept on deck for present use. "The melting and stowing away the ice," says the captain, "is a little tedious, and takes up some time: otherwise,

this is the most expeditious way of watering I ever met with."

Five tolerably fine days now succeeded, and the people, having a good quantity of fresh water on board, were able to wash and dry their clothes and linen—"a care that can never be enough attended to in all long voyages." The wind blew in gentle gales, and the weather was mild, although the thermometer never rose above 36°, and was frequently as low as the freezing point.

On the 17th January the ships crossed the antarctic circle in long. 39° 35′ E., and in lat. 66° 36′ 30″ S. The sea was clear till about four o'clock P.M., when thirty-eight icebergs of various sizes were seen, besides a large quantity of loose ice, which, as the ships continued to advance to the south, became so thick as to prevent all further progress in that direction. This immense field was composed of different kinds of ice, such as high hills, loose or broken pieces, packed close together, and a float of ice to the south-east of such extent that no end to it could be seen from the mast-head. This obstruction rendered it imprudent to attempt to proceed further in a southern direction, and, as the summer was

already half over, the ships prepared to return northward. The wind continued at E. by S., so that the ships were obliged to return over part of the sea which had been already traversed, which would otherwise have been avoided. The weather continued during many days to be exceedingly gloomy and stormy. On the 30th at noon they passed near two icebergs, the last which were seen on this cruise; the one nearest to them was falling to pieces with a noise equal to the report of a four-pounder. On the 1st of February, being in lat. 48° 30′, and long. 58° 7′ E., they looked out for the land said to have been discovered by the French, but not the least signs of it were seen. A float of sea or rock-weed, with several birds (divers) about it, was noticed. These were signs of the vicinity of land, but the direction of the wind prevented further search.

In latitude 49° 13′ S., Captain Furneaux thought he saw land to the north-west, the sea being smooth at one time, when the wind blew in that direction. In order to clear up this point, Captain Cook beat about in that direction for some time in spite of the badness of the weather. No land, however, was discovered. On the 7th February

the ships enjoyed the rare treat of a fine day, which was well employed in airing the men's bedding and clothes on deck, and cleaning the ship between decks. As birds continued to be abundant, they sounded on the 8th, but found no ground with a line of 210 fathoms. In the evening of this day the ships parted company in a fog. The *Resolution* fired a fog signal every half hour till the afternoon of the 9th, when the weather having cleared up, the *Adventure* was nowhere to be seen. There was a strong gale at NN.W., with a heavy sea, which obliged the ship to lie-to till next morning. Guns were fired, and lights exhibited all night, and when morning came, the *Adventure* was still not to be seen. Captain Cook, therefore, gave up looking for her, and steered to the S.E. The number of birds about the ship seemed to indicate the vicinity of land, but the great westerly swell of the sea rendered it improbable that any land of considerable extent lay to the west; nor was it probable that any land lay to the north, as the ship was only about 160 leagues to the south of Tasman's track in 1642; and Captain Cook conjectured that the *Adventure* would explore that place, which was afterwards

found to be the case. On the 16th, birds were again seen; "but," says Cook, "we had now been so often deceived by these birds, that we could no longer look upon them, nor, indeed, upon any other oceanic birds which frequent high latitudes, as sure signs of the vicinity of land." "In the night, we had fair weather and a clear, serene sky, and between midnight and three o'clock in the morning, lights were seen in the heavens, similar to those in the northern hemisphere, known by the name of Aurora Borealis, or Northern Lights; but I never heard of the Aurora Australis being seen before. The officer of the watch observed that it sometimes broke out in spiral rays, and in a circular form; then its light was very strong, and its appearance beautiful. He could not perceive that it had any particular direction, for it appeared at various times in different parts of the heavens, and diffused its light throughout the whole atmosphere."

The next day at noon they came up to an iceberg, which was at least half a mile in circuit, and 200 feet high. There was very little loose ice about it; and while they were considering whether they should hoist out the boats to take

some up, a great quantity broke off, drifted fast to the westward, and was, in a few hours, spread over a large extent of sea. This was, doubtless, caused by a current setting in that direction, for the wind could have but little effect upon the ice, especially as there was a large hollow swell from the west. After getting a quantity of ice on board, they made sail to east, inclining to south, with a fresh gale at south. This course led them among numerous icebergs, so that it was necessary to proceed with great caution. In the night, the thermometer fell to 30°. During the last few days as they advanced to the north, the temperature had gradually risen to 45°, but it fell again on changing their course southward.

They continued for some days to be surrounded by icebergs, with very unfavourable weather. On the evening of the 23rd they were in lat. 61° 52′ S., and long. 95° 2′ E. "Surrounded," says Cook, "on every side with danger, it was natural for us to wish for daylight. This, when it came, seemed only to increase our apprehensions, by exhibiting to our view those huge mountains of ice which in the night we had passed without seeing. These unfavourable circumstances, toge-

ther with dark nights at this advanced season of the year, quite discouraged me from putting in execution a resolution I had formed, of crossing the antarctic circle once more. Accordingly, at four o'clock in the morning, we stood to the north, with a very hard gale at E. S. E., accompanied with snow and sleet, and a very high sea from the same point, which made great destruction among the ice islands. This circumstance, far from being of any advantage to us, greatly increased the number of pieces we had to avoid. The large pieces which break from the ice islands are much more dangerous than the islands themselves; the latter are so high out of water, that we can generally see them, unless the weather be very thick and dark, before we are very near them: whereas, the others cannot be seen in the night, till they are near the ship's bows. These dangers were, however, now become so familiar to us, that the apprehensions they caused were never of long duration, and were, in some measure, compensated both by the seasonable supplies of fresh water these ice islands afforded us (without which we must have been greatly distressed), and also by their very romantic appearance, greatly heightened

by the foaming and dashing of the waves into the curious holes and caverns which are found in many of them; the whole exhibiting a view which at once filled the mind with admiration and horror, and can only be described by the hand of an able painter."

Between eight o'clock A.M. of the 26th February, and noon of the 27th, the ship fell in among several icebergs, from which such vast quantities had broken, as to render sailing rather dangerous. The tempestuous weather seems to have broken up the icebergs; but by noon they got clear of the ice. A large hollow sea, such as is seen only on the great ocean, continued to accompany the wind as it veered from E. to S.W., so that it was almost certain that no land of considerable extent could lie within 100 or 150 leagues of the position of the ship between these points. The weather still continued to be miserable in the extreme. As it became warmer, the gales were not only stronger, but more frequent, with almost continual mist and wet, such as the seamen emphatically term "dirty weather." The very animals on board felt its effects. A litter of nine pigs was killed a few *hours after* their birth by the cold, notwithstanding

all the care taken of them. "From the same cause," says the commander, "myself, as well as several of my people, had fingers and toes chilblained. Such is the summer weather we enjoyed."

On the 1st of March the ship was in lat. 60° 36′ S., long. 107° 54′. The wind now fell calm, but there was a prodigious swell from the S.W., and at the same time, another from the S. or SS.E. The dashing of one wave against another made the ship roll and pitch exceedingly, but at length the north-west swell prevailed, and a calm continued till noon next day, when it was succeeded by a gentle breeze from S.E., which afterwards increased and veered to S.W. The ship then steered to the east, inclining to the south, till the 4th, when the wind shifting, the track was continued somewhat to the north. The weather was still complained of, neither sun nor moon being seen. There was not, in fact, the least appearance of summer weather, according to our ideas of summer in the northern hemisphere as far as 60° of latitude. Towards the middle of the month, however, a short interval of tolerably fine weather occurred, and Captain Cook was almost tempted to advance a few degrees to the south; but another

change soon convinced him that he was sufficiently south, and that the time was approaching when these seas could not be navigated without enduring intense cold. On the 15th, they were in lat. 59° 17′, and long. 140° 12′, and the evening was so clear and serene, that they could see many leagues around: no land, however, was visible. The ship continued on her course to the east, inclining to the south, till the morning of the 17th, when it was determined to quit this inclement region, and steer for New Zealand. This was accordingly done, and on the 26th March, they anchored in Dusky Bay, after having been 117 days at sea, during which time they had sailed 3,660 leagues without having once seen land. The general health of the crew was good, and the scurvy—that fatal scourge of the navy up to the time of Cook—had been kept off by the use of sweet wort, or unfermented beer, portable broth, and sour kraut; and Captain Cook also justly attributes the general good state of health in the crew, "to the frequent airing and sweetening the ship by fires," &c.

In New Zealand the *Resolution* joined her consort the *Adventure*, in Queen Charlotte's Sound, *the place of* rendezvous previously agreed on, and

after refreshing the crew, the ships started for Otaheite and other islands in the Pacific, where they passed their time until the return of summer should permit the antarctic cruise to be resumed. In returning to New Zealand, as a starting point, the ships parted company in a gale of wind. They did not meet again in New Zealand, and, as time was too precious to wait on the chance of the *Adventure* coming up, Captain Cook determined to proceed alone. In putting this resolution into execution, he pays a just compliment to the discipline of his crew. "On quitting the coast, and consequently all hopes of being joined by our consort, I had the satisfaction to find that not a man was dejected, or thought the dangers we had yet to go through were in the least increased by being alone; but as cheerfully proceeding to the south, or wherever I might think proper to lead them, as if the *Adventure*, or even more ships, had been in our company."

It is not necessary to follow the *Resolution* in this cruise, not only because no land was discovered, but also because her adventures were very similar to those already detailed. There was the same miserable weather, during which the snow and sleet

often froze to the rigging as it fell, making the ropes like wires, and the sails like boards or plates of metal; the sheaves also were frozen so fast in the blocks, that it required strenuous efforts to get a topsail down and up; the cold so intense as hardly to be endured; the whole sea in a manner covered with ice; a hard gale, and a thick fog. Such was the weather commonly experienced by our distinguished navigator, during his second summer in the antarctic regions. The highest southern latitude which he reached in this cruise was 71° 10′, in long. 106° 54′ W. This was on the 30th January, 1774; and the appearance from the ship is thus described:—"At four o'clock A.M., we perceived the clouds over the horizon to the south to be of an unusual snow-white brightness, which we knew announced our approach to field-ice. Soon after it was seen from the topmast head; and at eight o'clock we were close to its edge. It extended east and west, far beyond the reach of our sight. In the situation we were in, just the southern half of our horizon was illuminated by the rays of light reflected from the ice, to a considerable height. Ninety-seven ice-hills were distinctly *seen* within the field, besides those on the outside.

Many of them very large, and looking like a ridge of mountains, rising one above another till they were lost in the clouds. The outer, or northern edge of this immense field, was composed of loose, or broken ice, close packed together; so that it was not possible for anything to enter it. This was about a mile broad, within which was solid ice in one continued compact body. It was rather low and flat (except the hills), but seemed to increase in height as you traced it to the south, in which direction it extended beyond our sight.

"I will not say it was impossible anywhere to get farther to the south; but the attempting it would have been a dangerous and rash enterprise, and what I believe no man in my situation would have thought of. It was indeed my opinion, as well as the opinion of most on board, that this ice extended quite to the pole, or perhaps joined to some land to which it had been fixed from the earliest time; and that it is here, that is, to the south of this parallel, where all the ice we find scattered up and down to the north is first formed, and afterwards broken off by gales of wind or other causes, and brought to the north by the currents, which we always found to set in that direction in

the high latitudes. As we drew near this ice, some penguins were heard but none seen; and but few other birds, or any other thing, that could induce us to think any land was near. And yet I think there must be some to the south behind this ice; but if there is, it can afford no better retreat for birds or any other animals than the ice itself, with which it must be wholly covered. I who had ambition not only to go farther than any one had been before, but as far as it was possible for man to go, was not sorry at meeting with this interruption, as it in some measure relieved us, at least shortened the dangers and hardships inseparable from the navigation of the southern polar regions." The *Resolution* therefore shaped her course to the north, in which it is not necessary to follow her.

Captain Cook passed his time in exploring some of the islands of the Southern Pacific, until the summer of the antarctic regions should again return, and allow him to complete the circumnavigation of the globe in high southern latitudes. In December, 1774, he doubled Cape Horn and made several geographical discoveries in its vicinity, among which was the island of Georgia, situated between lat. 53° 57′ and 54° 57′ S., and between long. 38°

13′, and 35° 34′ W. On the 27th January, 1775, the ship was again in latitude 60° S., and Captain Cook remarks that he did not intend to go farther in that direction, unless he observed certain signs of soon meeting with land; "for," he says, "it would not have been prudent in me to have spent my time in penetrating to the south, when it was at least as probable that a large tract of land might be found near Cape Circumcision. Besides, I was tired of these high southern latitudes, where nothing was to be found but ice and thick fogs."

On the 31st January while sailing NN. E. with the wind W., over a sea strewed with ice, the fog fortunately cleared away a little, and land was discovered three or four miles distant. The ship then tacked about three miles from the shore, and about half a league from some breakers.

The weather then became clearer, and gave a tolerably good sight of the land, which consisted of three rocky islets of considerable height: the outermost terminated in a lofty peak like a sugar-loaf, and was named *Freezeland Peak*, after the man who first discovered it. This was in lat. 59° S., long. 27° W. To the east of this peak appeared an elevated coast, whose lofty snow-clad

summits were seen above the clouds. It extended from N. by E., to E. S. E., and was named *Cape Bristol.* At the same time another elevated coast appeared in sight, bearing S.W. by S., and at noon it was seen to extend from S. E. to SS. W. This land was named *Southern Thule,* because it was the most southern land that had ever yet been discovered. It displayed a surface of vast height, and was everywhere covered with snow. Finding they could not weather Thule, they tacked, and stood to the north. Soon after the wind fell, and they were left to the mercy of a great westerly swell which set right upon the shore. In the evening, however, they saw Cape Bristol bearing E.S.E., and terminating in a point at the north, beyond which they could see no land—a discovery which relieved them from the fear of being carried by the swell upon the "most horrible coast in the world."

On the 1st February a new coast was discovered, which proved to be a high promontory, and was named *Cape Montague.* It was situated seven or eight leagues to the north of Cape Bristol. "We saw land from space to space between them, which *made* me conclude that the whole was connected.

I was sorry I could not determine this with greater certainty; but prudence would not let me venture near a coast subject to thick fogs on which there was no anchorage, where every part was blocked, or filled up with ice, and the whole country, from the summits of the mountains down to the very brink of the cliffs which terminate the coast, covered many fathoms thick with everlasting snow. The cliffs alone were all which was to be seen like land. Several large islands lay upon the coast, one of which attracted my notice. It had a flat surface, was of considerable extent, both in height and circuit, and had perpendicular sides, on which the waves of the sea had made no impression; by which I judged that it had not been long from land, and that it might have lately come out of some bay on the coast, where it had been formed."

Continuing to steer to the north all night, new land was seen next morning. It appeared in two hummocks, just peeping above the horizon, but they were soon lost in the distance. The ship was then steering in the direction of land which had been seen the day before; they approached it within three miles, and named it after Sir Charles Saunders. It is situated in lat. 57° 49′ S., and long. 26°

44′ W. Two islands were also discovered in lat. 57° 11′ S., and long. 27° 6′ W. They were named *Candlemas Isles*, after the day on which they were first seen.

The whole of the land thus discovered was named *Sandwich Land*, and was supposed to be either a group of islands, or the point of a continent; "for I firmly believe," says Cook, "that there is a tract of land near the pole, which is the source of most of the ice that is spread over this vast Southern ocean. I also think it probable that it extends farthest to the north, opposite the Southern Atlantic and Indian oceans, because ice was always found by us farther to the north in these oceans than anywhere else, which I judged could not be, if there were not land to the S.; I mean a land of considerable extent. For, if we suppose that no such land exists, and that ice may be formed without it, it will follow of course, that the cold ought to be every where nearly equal round the pole, as far as 70° or 60° of latitude, or so far as to be beyond the influence of any of the known continents; consequently we ought to see ice everywhere under the same parallel, or near it, and yet *the contrary* has been found. Very few ships have

met with ice going round Cape Horn, and we saw but little below the sixtieth degree of latitude in the Southern Pacific Ocean; whereas, in this ocean, between the meridian of 40° W., and 50° or 60° E., we found ice as far N. as 51°. Bouvet met with some in 48°; and others have seen it in a much lower latitude. It is true, however, that the greatest part of this southern continent (supposing there is one) must lie within the polar circle, where the sea is so pestered with ice, that the land is thereby inaccessible. The risk one runs in exploring a coast in these unknown and icy seas, is so very great, that I can be bold enough to say, that no man will ever venture farther than I have done; and that the lands which lie to the south will never be explored. Thick fogs, snow-storms, intense cold, and every other thing that can render navigation dangerous, must be encountered; and these difficulties are greatly heightened by the inexpressibly horrid aspect of the country—a country doomed by nature never once to feel the warmth of the sun's rays, but to lie buried in everlasting snow and ice. The parts which may be on the coast, are, in a manner, wholly filled up with frozen snow of vast thickness; but, if any should be so far open as to invite

a ship into it, she would run a risk of being fixed there for ever, or of coming out in an ice-island. The islands and floats on the coast, the great falls from the ice cliffs in the port, or a heavy snow-storm attended with a sharp frost, would be equally fatal."

INCLINED ICEBERG.

These reasons determined Captain Cook to proceed no further south. Accordingly, on the 6th February, he altered his course to the E., with a very strong gale at N., attended with a very heavy *fall of* snow. The quantity which lodged in the

sails was so great, that they were frequently obliged to throw the ship up in the wind, to shake the snow out; otherwise neither the sails nor the ship could have supported the weight. The ship continued to run down thirteen degrees of longitude, in the very latitude assigned for Bouvet's land, but not the slightest indication of land was discovered: and Captain Cook was well assured that some large icebergs, or fields of ice, had been mistaken for land by the French navigator.

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LOUIS-PHILIPPE'S LAND.

CHAPTER II.

THE SOUTH SHETLAND ISLANDS DISCOVERED, IN 1819, BY SMITH—EXPLORED BY BARNSFIELD—BY WEDDELL IN 1820—TRINITY LAND DISCOVERED BY POWELL—PALMER'S LAND BY PALMER—ALEXANDER'S LAND BY BELLINGHAUSEN—WEDDELL'S VOYAGE—GEORGE THE FOURTH'S SEA—BISCOE'S VOYAGE—ENDERBY'S LAND DISCOVERED—ADELAIDE ISLAND—BISCOE'S RANGE—BALLENY DISCOVERS SABRINA LAND—CLAIMS OF THE FRENCH AND AMERICAN NAVIGATORS.

WHEN the result of Cook's voyages in high southern latitudes became known, the idea of a great southern continent was abandoned, although our great navigator was himself of opinion, that the numerous icebergs which infested these seas must have been formed near land in the vicinity of the pole. No further attempts, however, were made to settle this interesting question until the year 1819, when the archipelago named the *South Shetlands* was discovered by Mr. William Smith, commander of the brig *William*, on a passage from Monte Video to Valparaiso. While in the latitude of Cape Horn, with a fair wind to go to the westward, and steering south-east, Mr. Smith, after continuing on this course for a few days, dis-

covered land on the 15th October, in lat. 62° 30′ S., and long. 60° W. The next day a boat was lowered, and a party landed. They found the land barren, and covered with snow. Seals were abundant. Having a cargo on board, Mr. Smith was not in a condition to pursue this discovery; but, on his arrival at Valparaiso, he made a report thereof to Captain Sheriff, his Majesty's Consul, who sent Mr. Edward Barnsfield, then master of the frigate *Andromache*, to explore this land. He found the northern range of the South Shetlands to lie between lat. 61° and 63°, and long. 54° and 63°, and to consist of twelve main islands, and innumerable rocks above water. They were further explored, in 1820, by Mr. Weddell, whose crews took an immense number of sea elephants and fur seals. The islands are ice-bound, and covered with snow. The highest, and most forbidding in aspect, is *James's Island*, which rises nearly 2,500 feet above the level of the sea. The whole island is almost inaccessible, and constantly covered with snow, excepting some perpendicular rocks, which will not retain it. None of the islands afford any vegetation save a short straggling grass, which is *found* in very small patches in places where there

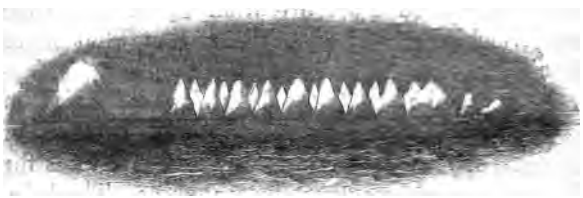
happens to be a little soil. This, together with a moss similar to that which is found in Iceland, appears in the middle of January, at which time the islands are partially clear of snow.

In 1821 Powell discovered *Trinity Land*, south of the South Shetlands and the South Orkneys, between lat. 60° 30′ and 61° S., and long. 44° 30′ and 46° 30′ W. Palmer, an American, discovered a coast line, west of Trinity Land, which is called *Palmer's Land;* and the Russian navigator, Bellinghausen, discovered *Alexander's Land*, south-west of Palmer's Land. All these lands are south and west of the South Shetlands. But the voyage which attracted most attention about this time was Weddell's, and requires a somewhat more detailed notice.

In September 1822 the brig *Jane*, of Leith, of 160 tons, and the cutter *Beaufoy*, of London, of 65 tons, set out on a voyage to the South Seas for the purpose of procuring fur-seal skins. The brig, with a crew of twenty-two officers and men, was under the command of Mr. James Weddell, Master in the Royal Navy; and the cutter, with a crew of thirteen, was commanded by Mr. Matthew Brisbane. Both vessels were fitted out in the

ordinary way, and were provisioned for two years.

At the beginning of January 1823 the vessels came in sight of the ice of the high southern latitude. On the 11th they were in lat. 59° 37′, and long. 46° 1′. The temperature of the air was 38°, and that of the water 33°. On the next day the South Orkneys were seen, and on the 14th the vessels were tacked into a bay, while a boat was sent out to explore the islands. The tops of the islands mostly terminate in craggy, towering peaks, and look not unlike the mountain-tops of a sunken land. Some leopardine seals were seen.



After having examined these islands, the vessels stood to the southward on the 23d, and passed through a cluster of ice-islands. Progress was greatly impeded by foggy weather. On the 27th *they reached* lat. 64° 58′, and long. 39° 40′. They

were now to the south of South Shetland, and Mr. Weddell shaped his course northward, considering it probable that land might be found between the South Orkneys and Sandwich Land. Ice-islands were now their constant companions, and had become so familiar as to be little dreaded. During the night they passed very near an object which appeared like a rock. The lead was immediately thrown out, but finding no bottom, they continued lying-to, till the chief mate ascertained it to be a dead whale very much swollen. Such objects, seen imperfectly in the night, are often alarming.

As there was no sign of land, they stood to the south-east on the 1st of February. "I had offered a gratuity of 10*l.* to the man who should first discover land. This proved the cause of many a sore disappointment; for many of the seamen, of lively and sanguine imaginations, were never at a loss for an island. In short, fog-banks out of number were reported for land; and many, in fact, had so much that appearance, that nothing short of standing towards them till they vanished could satisfy us as to their real nature."

In running east of this latitude, from 60° to 61°, they were constantly accompanied by birds common *to these latitudes.* Great numbers of finned

and hump-backed whales were also seen, and large shoals of penguins. Most of the ice-islands were lying in a direction east and west; the prevalent westerly winds probably carrying them along to the eastward, and spreading them in proportion to their hold of the water and the surface they presented above.

On the evening of the 4th they were within a hundred miles of Sandwich Land, and within such a distance of the track of Captain Cook as to be convinced that no land lay between; but, as it was probable that a large tract might be found a little farther south, they steered in that direction. Dense fogs and gales had kept the decks of the vessels constantly wet, which produced colds, agues, and rheumatism among the men. To remedy this, in some measure, the ship's cooking-stove was moved below, and by keeping up good fires and administering a little medicine, the men got well. On the 18th, at daylight, land, in the shape of a sugar-loaf, was reported; it turned out, however, to be nothing but black ice. An island of clear ice lay near it, which made a contrast of colour that completed the deception. The north side of *the peak* was so thickly incorporated with black *earth, that hardly* any person at a distance would

have hesitated to pronounce it a rock. On the 16th, in lat. 70° 26′ and long. 29° 58′, the sea was tolerably clear of ice, and on the 18th not a particle of ice was to be seen. There were many whales about the ship, and the sea was literally covered with blue petrels. The weather was mild and serene; and had it not been for the anticipation of future obstacles in the passage northward through the ice, the situation of the crews might have been envied. On the 28th they reached the most southern point in their voyage, namely, lat. 74° 15′ and long. 34° 16′ 45″. The wind blowing fresh at south prevented their making farther progress in that direction. Captain Weddell would willingly have explored the S. W. quarter, but taking into consideration the lateness of the season, and that he had to pass homewards through a thousand miles of sea strewed with ice-islands, with long nights, and probably attended with fogs, he could not determine otherwise than to take advantage of the favourable wind for returning. In honour of his Majesty, this hitherto unvisited part of the ocean was named *King George the Fourth's Sea.* The crew were complimented on their good behaviour, and informed that they were to the *southward of* the latitude to which any

former navigator had penetrated. The colours were hoisted, a gun fired, and both crews gave three cheers.

The ships returned in safety to South Georgia, and although the land was dreary, yet a little rest on shore was a great relief to all on board, who had suffered much from cold fogs and wet during the two months they had been navigating the south. The vessels, too, were much weather-beaten, and greatly needed refitting. A cargo of seal-skins had to be got ready; and on the subject of this trade Captain Weddell has some interesting remarks. After speaking of the great advantages to navigation and geography which resulted from Captain Cook's discoveries, he refers to them in a commercial point of view. In Cook's official report of the island of South Georgia, mention is made of the great number of sea-elephants and fur-seals found on the shores. This induced several merchants to fit out vessels to take them; the elephants for their oil, and the seals for their skins. No less than 20,000 tons of oil were, in this way, procured for the London market, and a quantity of fur-seal skins were usually brought along with *the oil.* The Americans also conveyed from *Georgia cargoes* of these skins to China, where

they frequently sold for five or six dollars a skin. The Island of Desolation, described by Cook, was also a source of great profit; and it is calculated that during the time these two islands were resorted to for the purposes of trade, more than 2,000 tons of shipping, and from two to three hundred seamen, were annually employed in this traffic. This is a striking, but by no means uncommon example of the commercial advantage to be derived from voyages of discovery.

In the year 1830 the brig *Tula*, of 148 tons, belonging to Messrs. Enderby, and commanded by Mr. John Biscoe, R.N., left London on a South Sea sealing-voyage, but with special instructions from her owners, also, to endeavour to make discoveries in a high southern latitude. She was accompanied by the cutter *Lively*, in the same employ.

The two vessels arrived off the Falkland Islands on the 8th November, and on the 27th proceeded to Sandwich Land. On the 16th December, in long. 29° 14′ W., many icebergs were passed, which were conceived to be drifting between Sandwich Land and New South Shetland; and among them the two vessels parted company, to

their mutual great anxiety, and did not meet again till the 14th. On the 20th an island was made, in lat. 58° 25′ S., long. 26° 55′ W.; its appearance was very discouraging and "terrific, being nothing more than a complete rock, covered with ice, snow, and heavy clouds, so that it was difficult to distinguish one from the other." No attempt was made to land on it. Proceeding to the northward, on the following day, another island was distinguished in the S. W. similar to the preceding one, which now bore W. by N. The boats were not able to land on either island. These were the Montague and Bristol islands of Cook, but Biscoe places them fifty miles further west than they are usually laid down. The thermometer stood at 29° in the air, and 31° in the water. A third, Friesland Island, was seen to the southward of them, and a fourth to the northward.

Several following days were spent in endeavouring to get to the southward, and, if possible, also to the westward, there being strong indications of land in that quarter; but these were all unsuccessful. The field-ice was either quite continuous and unbroken, or, where bays were formed in it, *these* were found to open but a little way, and the

vessels were obliged to return as they went in. Fortunately the weather was remarkably smooth, even when the wind, which was westerly, blew strong; and this circumstance both facilitated the working of the vessels and encouraged the crews to persevere, by confirming their surmises as to the existence of land in the neighbourhood. On the 29th, at noon, the latitude observed was 59° 11′ S., long. 24° 22′ W.; but the wind blowing hard from the S.W. further investigation in that quarter was abandoned; the islands before seen were again sighted, and sail was made to the eastward.

On the 7th January, 1831, the *Tula* and her companion were in lat. 59° 35′ S., long. 20° 21′ W., closely skirting the field-ice, and examining every inlet in hopes of finding a passage through it to the southward, and, as was hoped, to clear water. They were, however, constantly disappointed, and at last came suddenly to the head of a bay of firm ice, with a view from the mast-head to an extent of at least twenty miles in every direction; and to the southward the ice appeared so smooth and firm that any one might have walked on it. The weather was so clear, that Captain Biscoe was convinced that land of any considerable elevation

might have been seen at the distance of eighty or ninety miles.

From the 7th to the 16th January the course made good was nearly due east. The wind had hung, during the interval, to the south, with a fresh breeze on two occasions from south-west, and a considerable sea, which seemed to indicate that the distance from land was now increasing. The ice was also, from time to time, more broken into bergs, fifty-eight of them being at one time in sight together; and on the 16th the temperature of the water was 34°, of the air, in the shade, 45°, in the sun 77°, with a corresponding genial warmth to the feelings of the crew. The wind also veered to the westward, and the vessels were hauled up to the south-east, steering between icebergs and broken patch-ice; but scarcely any birds were yet to be seen, though on the 20th two petrels were observed, and one albatross, being the first since leaving the latitude of South Georgia. On the 21st the latitude was 66° 16′, long. 0° 24′ 30″ W.; no ice was in sight, but the wind was again south and south-east, and many indications of land in the same quarter. Several spotted eagles, with some blue petrels,

were in sight. On the 23d the wind was from SS.W., and came in puffs as if from land; the water was smooth, and at times discoloured; and many eaglets and Cape pigeons hovered about the vessels. This was in lat. 67° 42′, long. 3° 31′ E.; the temperature of the air, at midnight, was 31°, and of the water 35°. The ice now, however, began to close in again, but the object of getting to the south-east was steadily pursued. On the 1st February a seal was seen, and many birds which do not go far from land. The water was also of a lighter colour; but no soundings were obtained, nor any land made out with certainty. On the 8th, at noon, the position was 67° 12′ S. 27° 15′ E., the wind blew hard from E.S.E. for some days, with a heavy tumbling sea, and much danger from icebergs; but the vessels still persevered in making way to the eastward. On the 17th the position was 66° 44′ S., 38° 5′ E. On the 19th they crossed Captain Cook's track in 1773, and found the field-ice precisely in the same position in which he left it. On the 25th a very distinct appearance of land was seen in lat. 66° 2′, long. 43° 54′ E., with many icebergs and patches of field-ice in sight; but it was speedily lost

among these, and could not be again distinctly made out. Several seals and penguins, with one young sea-elephant, were also seen; and the margin of the solid body of ice was nearly as high as the North Foreland, and much resembled it. At length, on the 27th, in lat. 65° 57′ S., long. 47° 20′ E., land was distinctly seen, of considerable extent, but closely bound with field-ice; the temperature of the air at the time being 22°, which was considerably lower than had been previously experienced; that of the water was 30°; and, for the first time, vivid coruscations of Aurora Australis were seen, "at times," says Biscoe, "rolling, as it were, over our heads in the form of beautiful columns, then as suddenly changing like the fringe of a curtain, and again shooting across the hemisphere like a serpent; frequently appearing not many yards above our heads, and decidedly within our atmosphere. It was by much the most magnificent phenomenon of the kind that I ever witnessed; and although the vessel was in considerable danger, running with a smart breeze and much beset, the people could scarcely be kept from looking at the heavens instead of attending to the course."

Every effort was now made to close with the

land thus discovered; and great risk was run during a heavy gale of wind, which began on the 5th March and continued increasing to a perfect hurricane till the 7th. During this time the two vessels separated; the *Tula* was much injured, several of her men were severely hurt, and their health seriously affected by exposure to the cold. On the 8th, when an observation was again obtained, it was found that the ship had drifted 120 miles N.N.W. Sail was made to endeavour to get to the south-east; and on the 16th, nearly the same land was made, the longitude being now 49° E. A headland previously seen was recognised, and called *Cape Ann;* and unceasing efforts were made for some days to approach nearer to it, but all in vain. The state of the ship's company rendered it necessary to seek a more genial climate. Much anxiety was also felt for the safety of the *Lively* cutter, which had not been seen since the 6th instant, and which it seemed probable (if she had survived the gale) had sought a lower latitude, and made for Van Dieman's Land. On the 6th April, after nearly three weeks of the severest fatigue, Captain Biscoe determined to make also for that land, although he had not approached

the newly-discovered shore (which was very properly called *Enderby's Land*,) nearer than from twenty to thirty miles. He arrived in the Derwent on the 7th May; two of his men died on the passage, and the others were so ill that the ship was entirely navigated by the three officers, one man and a boy.

The *Lively* did not rejoin the *Tula* till the following August, having been compelled to put in and refresh her people at Port Phillip, in New South Wales. Both vessels again put to sea on the 10th October, 1831, and remained on the coast of New Zealand and among the Chatham and Bounty islands, sealing, till the 4th January, 1832. They then again bore away to the south-east, and in the 14th, in lat. 56° 26′ S. long. 156° 48′ W., many birds were seen, and much sea-weed was floating about. Squalls of snow also came from the southward, and on the 25th, in lat. 60° 45′ S., long. 132° 7′ W., icebergs were met with. On the 31st, about a hundred of these bergs were in sight at one time, and the clouds hung constantly low and heavy in the south-west, as though land was in that quarter, *but the state* of the weather prevented further

examination. On the 12th of February, in lat. 66° 27′ S., long. 81° 50′ W. numerous birds, with several hump and finned-back whales, were seen, and no fewer than 250 ice-islands were counted from the deck. On the 15th land was again seen, but at a great distance. On the following morning it was ascertained to be an island, and called *Adelaide Island*, in honour of her Majesty. In the course of the ensuing fortnight, this island was made out to be the westernmost of a chain of islands, lying E.N.E. and W.S.W., and fronting a high continuous land, since called *Graham's Land*, which Captain Biscoe believes to be of great extent. The range of islands has also been since called *Biscoe's Range*, after the discoverer.

"Adelaide Island has a most imposing and beautiful appearance, with one high peak shooting up into the clouds, and occasionally appearing both above and below them, and a lower range of mountains extending about four miles from north to south, having only a thin covering of snow on their summits; but towards their base buried in a field of snow and ice of the most dazzling brightness, which slopes down to the water, and ter-

minates in a cliff of ten or twelve feet high, riven and splintered in every direction, to an extent of two or three hundred yards from its edge. At a distance of three miles no bottom could be found with 250 fathoms of line; and round all the islands the depth of water was considerable. One called Pitt's Island (in lat. 66° 20′ S., long. 66° 38′ W.) has many bays, and joins with the main land behind; a good harbour for shelter, but the bottom is rocky. No living animal was found on any of these islands; and not many birds, although only a few miles to the northward they were very numerous."

On the 21st February, Captain Biscoe succeeded in landing on what he calls the main-land, and took formal possession of it: the highest mountain in view being called *Mount William*, after his Majesty; and the next, *Mount Moberly*, in honour of Captain Moberly, R.N. The place was in a deep bay, "in which the water was so still, that could any seals have been found, the vessels could have been easily loaded, as they might have been laid alongside the rocks for the purpose. The depth of water was also considerable, *no bottom* being found with twenty fathoms of line

almost close to the beach; and the sun was so warm that the snow was melted off all the rocks along the water-line, which made it more extraordinary that they should be so utterly deserted. The latitude of Mount William was determined to be 64° 45′ S., longitude 63° 51′ W.

Captain Biscoe after this repaired to the South Shetland Islands, where he was driven ashore, lost his rudder, and very narrowly escaped shipwreck; and after touching at the Falkland Islands, near which he again parted company with the *Lively*, proceeded to St. Catherine's in Brazil, where he was informed of her total loss on Mackay's Island, one of the Falklands; the crew, however, were saved, and brought away by a Monte Video cruiser.

In the journal of the Royal Geographical Society, from which this account of Captain Biscoe's expeditions has been abstracted, the following observations occur. This voyage "has added one more to the many examples previously set by British seamen, of patient and intrepid perseverance amidst the most discouraging difficulties; and the exertions used have not been without a certain reward. Two distinct discoveries have

been made, at a great distance the one from the other; and each in the highest southern latitude, with very few exceptions, which has yet been attained, or in which land has yet been discovered. The probability seems thus to be revived, of the existence of a great southern land, yet to be brought upon our charts, and possibly made subservient to the prosperity of our fisheries; so strongly, indeed, are Messrs. Enderby impressed with this probability, that, undeterred by the heavy loss which they have incurred by the late voyage, they propose again sending out Captain Biscoe this season, on the same research. To encourage his future exertions, by paying a just tribute to the past, the Council of the Royal Geographical Society have awarded him their Royal Premium for 1832."

The expedition referred to in the above extract was unfortunately a failure. The ships got entangled in the ice at the commencement of the voyage, and were so much injured as to be obliged to return.

In the year 1839, Balleny discovered land in lat. 66° 44′ S., and long. 165° 45′ E., in the ship *Eliza Scott*, belonging to Mr. Charles Enderby

and some other gentlemen. On the morning of the 9th February, a darkish appearance was observed to the south-west. At noon the sun shone brightly, and the appearance of land was more distinct; at sunset it was seen to consist of three separate islands of good size; the western one being the longest. Next morning, after running through a considerable quantity of drift ice, they got within half a mile of the middle island, and found it completely icebound, with high perpendicular cliffs. On attempting to run between the middle and western island, the passage was found to be blocked up with solid ice. On the 11th, land was seen, bearing about W.S.W., and of a tremendous height, covered with snow. The ship was surrounded by icebergs in every direction. At noon, the latitude given by a very indifferent observation, was 66° 30′ S.; but the weather immediately came on thick. On the 12th, an attempt was made to land on the eastern island, which is thus noticed: "When we got close with the boat it proved only the drawback of the sea, and having a beach of only three or four feet at most. Captain Freeman jumped out, and got a few stones, but was up to his middle in water. There

is no landing or beaches on this land; in fact, but for the bare rocks where the icebergs had broken from, we should scarcely have known it for land; but as we stood in for it, we plainly perceived smoke arising from the mountain-tops. It is evidently volcanic; as specimens of stone, or rather cinders, will prove. The cliffs are perpendicular, and what in all probability would have been valleys and beaches, are occupied by solid blocks of ice. I could not see a beach or harbour, or any thing like one. Returned on board at 7 P.M., and got the vessel safely through the drift ice before dark, and ran along the land."

Indications of land are frequently mentioned in the log of the *Eliza Scott,* during the following fortnight, as she sailed to the westward along the parallel of the sixty-fifth degree of latitude; and on the 26th, when in lat. 64° 40′ S., and long. 131° 35′ E., and therefore only a few miles to the westward of the icy barrier, seen by D'Urville on the 30th of January in the following year, and named by him Côte Clairie, the log states, "that at 8 A.M. it cleared off a little, and we thought we saw land to the eastward, tacked, and stood for it. At 11.30 A.M. made it out to be fog

hanging over some icebergs." Thick weather, with snow and sleet, prevented a further examination of this part of the coast. From nearly the same position Lieutenant Wilkes, in the American expedition, on the 7th February 1840, says: "Continued all day running along the perpendicular icy barrier about 150 feet high. Beyond it the outline of high land could be well distinguished." A point of the land, named *Cape Carr*, was in lat. 64° 49′ S., long. 131° 40′ E. There is, therefore, no doubt that Balleny really saw land; and Captain Ross thinks it will prove to be a continuation of D'Urville's *Terre Adélie*, discovered by him on the 19th January. This land was seen by Lieutenant Wilkes just a week afterwards; but he was then unconscious of its having been previously visited by the French navigator.

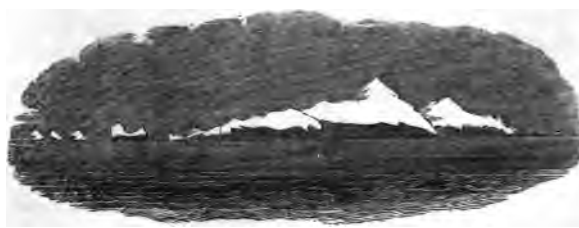
"Appearance of land" is mentioned again in the log of the *Eliza Scott*, on the 2nd March, when in lat. 65°, and long. 122° 44′ E.; but it was impossible to get to it through the ice. This land was named *Sabrina Land*, after the cutter which accompanied the *Eliza Scott* on this bold and hazardous cruise.

Captain Ross thinks that Lieutenant Wilkes

must have passed this land in nearly the same latitude as Balleny did; and that the thick snowy weather prevented him from seeing it. He seems to have placed this land on his chart on the authority of Balleny, but under a different name. He calls it *Totten's high-land.*

Thus it appears that while the French and Americans are contending with each other for the honour of the discovery of what they call an "Antarctic continent," neither of them have any claim to it, for Captain Balleny and his companions had discovered land a year before them. Captain Sir James Clark Ross, however, thinks that the various patches of land thus discovered by the English, French, and American navigators on the verge of the Antarctic circle cannot be considered to form a great southern continent. The continuity of the largest of these patches (Terre Adélie) has not been traced more than 300 miles, Enderby's Land does not exceed 200 miles, and the others are mostly of inconsiderable extent, of somewhat uncertain determination, and with wide channels between them: this would rather lead to the conclusion that they form a chain of islands. "Let *each nation,* therefore, be contented with its due

share," says Captain Ross, "and lay claim only to the discovery of those portions which they were the first to behold. But, if future navigators should prove those conjectures about a continent to be correct, then the discoveries of Biscoe in the brig *Tula*, in January 1831, and those of Balleny in 1839, will set at rest all dispute to which nation the honour justly belongs, of the priority of discovery of any such continent between the meridians of 47° and 163° of east longitude, and those of our immortal Cook in the meridian of 107° W., in January 1774; for I confidently believe, with M. D'Urville, that the enormous mass of ice which bounded his view, when at his extreme south latitude, was a range of mountainous land covered with snow."



THE ASTROLABE AND THE ZELEE.

CHAPTER III.

THE FRENCH EXPEDITION UNDER DUMONT D'URVILLE—DETENTION IN THE PACK—LOUIS PHILIPPE'S LAND—BESET BY ICEBERGS—ADÉLIE LAND—CÔTE CLAIRIE.

In the year 1837 the French government sent two corvettes, the *Astrolabe* and the *Zélée*, on an Antarctic expedition, under the command of Captain Dumont D'Urville. Their instructions were to follow, if possible, the route of Weddell, and to endeavour to get into a higher southern latitude than was attained by that navigator (74° 15′.) In January 1838, the ships had reached the most southern portion of South America, and on the 15th came in contact for the first time with floating ice in lat. 59° 30′ S., long. 57° 30′ W. The icebergs excited the most unbounded astonishment in all on board who now saw them for the first time, and it is necessary somewhat to sober down the descriptions which are given of them. One of them is said to have measured upwards of

6,000 feet in length, by 200 in height: seen from a distance, it resembled a long uniform table-land, with vertical sides, and greatly resembling land in certain positions; and Captain D'Urville remarks thus early how easy it is to mistake one of these masses of ice for an island or an insulated rock.

On the 22d they arrived at a pack of ice, extending from the south-west to the north-north-east, which seemed to oppose all further progress. This was in a spot where Weddell found an open sea. As far as the eye could reach, an immense plain was extended, consisting of huge blocks of ice, of all forms, huddled together, and piled upon each other. Their mean height did not exceed 12 or 15 feet; but here and there blocks of larger size reached six or eight times that height, and seemed to be the principal buildings in a city of white marble or alabaster. The edge of the pack presented a front like a wall, here and there broken down, and forming small creeks, scarcely large enough to admit the corvettes. The whole of this extensive plain was undulating to the motions of the waves; its tint was generally greyish under the fog which rested on it, but when this was driven away by the wind, and the

sun shone brightly, the effect was brilliant in the extreme. A mournful silence reigned over this icy scene, occasionally disturbed by the blowing of the whale at the surface; no other form of life was apparent, except a few petrels, which skimmed on noiseless wing over the icy field.

On the 24th they were in lat. 63° 23′ S., and long. 45° 17′ W. They had already passed the meridian, in which Weddell found open water, but now it was every where blockaded with ice. At sunrise next day, the weather being exceedingly clear, the spectacle was as magnificent as it was discouraging. An immense number of large ice-bergs stood out like a large city of white marble, with its palaces, its domes, its spires, arcades, and bridges falling into ruins. The reflection of the sun's rays appeared like the light thrown back by the windows of a hundred palaces, and served to vary the features of this grand panorama.

The ships continued to advance towards the New South Orkneys. The barrier seemed to be closed in every part until the 4th of February, when, seeing an appearance of opening, it was determined at all hazards to push into it. Snow and fog rendered the navigation difficult, and the

masses of pack ice were so numerous that it was impossible to avoid severe blows, which considerably damaged the rudders of both ships. After advancing some way into the pack, the weather became too thick to proceed. Accordingly the ships hove-to in a small space of open water, surrounded on all sides by walls of ice. The ships were made fast to a solid floe-piece. During the night the wind became strong, and the ice began to close in, causing considerable alarm on board, which was increased by the thumping of the smaller ice as it was carried past the ship by the current. It was feared that the *Zélée* had parted company during the storm, but in the morning she was seen at the distance of half a mile, entirely surrounded by ice and covered with snow. Not a single opening in the ice was to be seen from the mast-head. In the north there was a slight water-sky, which seemed to indicate the presence of an open sea, and an attempt was made to move the ships in this direction; but a fog coming on soon put a stop to further progress. When this cleared off, the open sea was discovered about a mile off, "at the sight of which," says D'Urville, "our feelings *resem*bled those of the newly caged bird on first

discovering the blue sky through the wires of its prison." An attempt was made to bore through the ice, but the ships soon stuck fast. A number of men were sent upon the ice with various tools to open a passage; but they were attracted by some seals, the chasing of which seemed to offer more sport than the work they were sent to accomplish, so that little was done towards liberating the ships. Nor was the wind favourable to the undertaking. It was now beginning to blow strongly, and the surf at the edge of the pack was too dangerous to pass, even supposing the ships could have reached it. It was therefore determined to push further into the pack. In attempting to find an opening, the ships were much thumped by the ice, sometimes so severely as to throw the people down. D'Urville compares his ships in this hole of water, four or five miles in diameter, to two stags pursued by dogs in a park surrounded by high walls. There was no escape. Fearful walls of ice surrounded them on all sides, and the snow was falling thickly. The masses of ice, in striking against each other or against the ships, produced sounds of various characters and degrees of loudness, which disturbed

repose at night, and embittered the waking moments with the reflection that the ships could not long hold out against such violent assaults.

At daybreak on the 6th the ice had closed in so that there was scarcely room to work the ships. It was therefore determined to endeavour to force a passage to the north, any other direction being likely to lead them further into this terrible labyrinth. By the aid of a favourable wind, they succeeded in advancing three or four miles to the N. W., and found a breadth of two miles and a half of closely packed ice between them and the sea. By great exertions, with levers, saws, and hatchets, a passage was opened, and, by means of ropes and manual exertions, the ships were moved slowly forward in a zigzag direction to avoid the largest masses. After ten hours of hard work the ships had advanced a mile further. A man was then sent over the ice towards the open sea. He proceeded two miles, and found the open water still at a great distance, and that the ice became heavier and more dangerous in advancing towards the pack-edge. At 8 A.M. the *Astrolabe* was within three hundred feet of a large tabular berg, surrounded by several others placed erect.

The waves rushed through the lower openings with a fearful noise, so that it was prudent to keep at a tolerable distance from this dangerous neighbour. During the night the ship appeared to be drifting down upon it; and when D'Urville came on board to reconnoitre, he saw with joy that the sea was open, and the men who were sent with a cable to tow the ship from the neighbourhood of the iceberg, rowed over a space on which they were walking a few hours before. This striking change was due to the wind, and probably also to a new direction in the currents. Anxious to seize this favourable opportunity of disengaging the ships, D'Urville proposed to his lieutenants immediately to set sail, and gain at least one or two miles towards the open sea. This proposal (which, we think, ought to have been a positive order) was received so coldly, and with so many objections, that he was induced to delay it till break of day. And never was there a better illustration of the old proverb, "Delays are dangerous;" for during the night the wind had changed, and on going on deck in the morning of the 7th, D'Urville found that the ice had closed in again more compactly than ever, and the corvette was immovable.

The wind from the NN.E. caused much motion in the pack, and it is described as an imposing spectacle to watch the undulations of this solid floor adjusting itself to the motions of the waves. It appeared like a snow-covered valley under the influence of an earthquake. A favourable change in the wind came on on the 9th, which, as it happened in the daytime, was taken advantage of, and after some hours' struggling with the ice, the ships were once more in open water.

On the 10th they were able for the first time during eight days to take observations to determine their position, which at noon was lat. 62° 9′ S., and long. 39° 22′ W. The weather was very cold, and many of the crew laid up with sickness from exposure to it. They continued during several days to sail along the edge of the pack, and on the 14th reached the spot where Weddell found an open sea, and proceeded to the south. But now the ice was impenetrable, and D'Urville could not imagine how this solid and extensive pack, in which the ships had been imprisoned, and along which he had sailed for three hundred *miles*, could in any season so totally disappear as

to leave an open sea. Having thus passed a month among the ice and fogs of the Antarctic regions without having made any geographical discovery, and being unwilling to quit these latitudes without accomplishing something, D'Urville returned upon the Orkneys and the eastern shore of New South Shetland, and completed their geography. Being anxious to ascertain the true nature of those snowy peaks to which whalers had given the names of *Palmer's Land* and *Trinity*, and which had also been variously named by Forster, Biscoe, and Morrell, he made for these little known points. Approaching the land in a different direction from any previous navigator, D'Urville explored it for 120 miles between 63° and 64° S. and 58° to 62° W. of Paris, and found its coast everywhere covered with ice, and crowned with numerous peaks. The largest portion of the land was called *Louis Philippe's Land;* the smaller ones received various appellations. During this fatiguing service the season became late, and the crews being afflicted with scurvy, rendered it necessary to seek a warmer region. They accordingly sailed for one of the ports in Chili, and reached Conception early in April.

It is not necessary to notice the proceedings of the *Astrolabe* and the *Zélée* from this time to their arrival at Hobart Town at the end of 1839. Admiral D'Urville was unwilling to return to Europe without making another attempt at discovery in Antarctic regions. Accordingly, on the 1st January, 1840, the ships set out on another expedition. Between the 120th and 160th degree of east longitude was an immense track open to the enterprising navigator. D'Urville admits that at this time he was ignorant of the discovery made a year before of the Balleny Isles and Sabrina Land; but with this exception the field was open to discovery, for it had been traversed by Cook not lower than about the 60th parallel of latitude. The position of the south magnetic pole was also an important problem to be solved.

On the 15th January they began to feel the cold of the icy regions to which they were approaching. The wind blew strong, snow was falling, and the temperature of the sea became suddenly depressed; thousands of petrels of all colours surrounded the ships. All this seemed to *indicate* their vicinity to the ice, although they

had scarcely reached the 58th degree of latitude. Accordingly, on the next day, the first iceberg was seen, and soon afterwards icebergs became numerous; the temperature of the air fell to the freezing point, and D'Urville scarcely dared to hope that he should be able to attain a very high southern latitude. They were now surrounded by tabular icebergs of enormous size, apparently but recently detached from some icy coast, for they were not at all worn by the action of the sea, and presented no appearance of thaw. The ships were surrounded by various animals, such as white and gray petrels, a whale, and two or three seals—an indication of the vicinity of land. Low clouds frequently assumed so deceptive an appearance, that "Land" was many times called out; but as on the previous voyage they had many times been deceived in this way, but little attention was paid to the call.

The weather now became bright and beautiful, the sea smooth as a lake, and the sun lighting up the enormous icebergs produced a magical effect. In crossing the Antarctic circle the sailors contrived a number of ridiculous ceremonies, similar to those employed in crossing the equator, except that

showers of rice and beans were used instead of water. The night before the ceremony a courier, mounted on a seal, waited upon the admiral, and informed him that the sovereign of the Antarctic regions would visit him next day. Accordingly on the 20th a masquerade was enacted, and the day devoted to mirth and festivity.

At this time the days are longest in these icy regions. At nine in the evening the sun was still above the horizon, and at ten minutes before ten his disc disappeared behind what seemed to be land. The grandeur of this sunset was extreme. A long trail of light marked the spot at which the bright luminary had disappeared, and the calm of night threw over the majestic icebergs a beautiful but severe aspect. At midnight the twilight was sufficient to enable any one to read on deck, and there was not more than half-an-hour of real night. The next day the land was made out more distinctly; it was entirely covered with snow, and extended from east to west, apparently sloping down to the sea by an easy descent. There was scarcely any wind, so that the ships approached the land but slowly. In getting *nearer,* crevices were seen in the ice which

covered it, and deep ravines caused by the melting of the snow. The icebergs, however, became more numerous and dangerous, often leaving nothing more than a narrow lane of water open to the ships. They towered high above the topmasts, and made the ships appear so ridiculously small, that "we appeared," says D'Urville, "to be moving along the narrow streets of a city of giants." At the base of these immense monuments were vast caverns, excavated by the sea, in which the waves were sporting with a tremendous noise. The effects of light and shade in these icy vaults were very wonderful. Numerous cascades poured down from the summit of these bergs, which sometimes stood so directly in the ship's path as to shut out all view of the land. The voices of those on board re-echoed from their massive walls. "On looking back through this lane of ice," says D'Urville, "on our companion, which was closely following us, she appeared so diminutive, and her masts so slender, that we scarcely recognised her." After proceeding in this way for about an hour they reached a capacious bay, formed by the land on one side, and by the chain of floating icebergs which they had just

traversed on the other. At noon (21st) they were within three or four miles of the newly discovered land. It extended from S.E. to N.W. beyond the reach of vision; it was entirely covered with snow, and reached a height of from 3,000 to 3,600 feet. No prominent peaks were seen, and in no place could the soil or the rock be discovered. It appeared like a huge inaccessible iceberg, its sides consisting of vertical cliffs of ice. The whole day was employed in reconnoitring. Some advanced capes, and shallow bays, blocked up with ice, were seen, but in no place did it seem possible to effect a landing. Some boats were sent out to make magnetic observations, and one of the officers succeeded by great exertions in reaching a small rocky projection, or islet, on which the tricoloured flag was displayed. "According to the ancient custom, which England has so jealously preserved, we took possession in the name of France of this islet, as well as of the neighbouring coast, which the ice prevented us from gaining. * * * We drank to the glory of France a bottle of the most generous of her wines, and never was the wine of Bordeaux called upon to play a more worthy part; never was a bottle emptied more to

the purpose." A number of penguins inhabited the rock, but not the smallest trace of vegetable life could be discovered. Numerous fragments of the rock itself were carried off as trophies. Close at hand were eight or ten other islets, with rounded summits; they are distant some 1,800 feet from the coast, on which several bare summits were seen, and a cape, the base of which was free from ice and snow. The land thus discovered was named *Adélie Land*;* a projecting cape, which had been seen early in the day, was called *Cape Discovery*, and the islet on which the landing was effected was named *Point Geology*.

The object of the expedition was now to explore the newly discovered coast as far as possible; but on the 24th a violent storm arose, which separated the ships, and exposed them during many hours to the greatest possible danger. On the evening of the 25th the *Zélée* was in sight, but much crippled by the storm. Both ships had been driven to a considerable distance from the land, and were again making up to it, in order to continue its examination, when, on the 29th, the unexpected cry of "Strange

* See note at page 195.

sail in sight," was heard. Every one rushed on board, when the stranger appeared to be an American brig of war, belonging, doubtless, to the squadron under Commander Wilkes. She was coming down with the wind with flying colours. D'Urville wishing to communicate, and fearing from the quantity of canvass she wore that she would shoot past them, ordered the mainsail to be shaken out, in order keep pace with her. The American seemed to interpret this manœuvre into a refusal on the part of D'Urville to communicate, and therefore kept on her course to the south without further notice.*

On the 30th the ships came in sight of the icy barrier, consisting of a uniform wall of ice, from 100 to 150 feet in height, and stretching out in a westerly direction. They sailed along it the whole day at the distance of two or three miles, without discovering the slightest change in its appearance, or any indications of land rising beyond it. There seemed every probability that this barrier formed a sort of edge or margin to a considerable coast, which was named *Côte Clairie.*

On the 31st they had reached long. 128°, when

* See page 122.

their progress was interrupted by an extensive pack. The commander therefore determined to abandon all further investigation. It might have been possible, he says, to have penetrated further to the west, and traced out a further extent of barrier, and probably also to have discovered land; for he thinks it most probable that beyond this barrier the great Antarctic continent stretches all the way to the pole. But the health of the crews of both ships, especially in the *Zélée*, forbade a further stay in these inclement regions; accordingly on the 1st February, in lat. 65° 20′, and long. 180° 21′, the ships' heads were turned to the north, with the intention of proceeding to Hobart Town.

THE PEACOCK IN CONTACT WITH AN ICEBERG. *Page* 110.

CHAPTER IV.

THE AMERICAN EXPEDITION UNDER WILKES—APPEARANCE OF LAND—FIELD-ICE—ICEBERGS—DANGEROUS SITUATION OF THE PEACOCK—DISCOVERY OF LAND—EXAMINATION OF THE BARRIER—AURORA AUSTRALIS.

In the year 1837 the American government sent out an expedition, under the command of Lieutenant Wilkes, for the purpose of making discoveries in the Antarctic seas. This expedition consisted of two sloops, the *Vincennes* and the *Peacock;* a brig, the *Porpoise;* two schooners, the *Sea-gull* and the *Flying-fish;* and a convoy, the *Relief.* It is not necessary to follow their proceedings until they had actually set out on the Antarctic voyage. They arrived at Sidney towards the end of 1839, and, having completed the necessary preparations, left that port on the 26th December. On the 2d January they got separated in a fog, and the *Vincennes* and the *Porpoise* proceeded to Macquarie Island, the place of rendezvous, which they missed, and proceeded westward, with a head wind, to the

icy barrier. On the 16th these two vessels, together with the *Peacock*, were in company in long. 157° 46′ E. Land was reported to Captain Hudson, of the *Peacock*. Lieutenant Ringgold states that he went aloft in the afternoon, the weather being clear and fine, the horizon good, and clouds lofty; that he saw over the field-ice an object, large, dark, and rounding, resembling a mountain in the distance; the icebergs were all light and brilliant, and in great contrast. "I watched for an hour, to see if the sun in his decline would change the colour of the object; it remained the same, with a white cloud above, similar to those hovering over high land. At sunset the appearance remained the same. I am thoroughly of opinion it is an island surrounded by immense fields of ice."

The field-ice is composed of a vast number of pieces, varying in size, and separated from one another; the long swell keeping the outer ones always in motion. The smallest pieces were about six feet in diameter, while the largest sometimes exceeded five or six hundred feet. Their depth below the surface varies still more; and some *appeared* to be soft, while others were hard and

compact. The depth of these does not probably in any case exceed twenty feet. Most of them, and particularly the larger ones, had a covering of about eighteen inches of snow. The whole, at a distance, appeared like a vast level field, broken up, as it were, by the plough, and presenting shapeless angular masses, of every possible figure, while here and there a table-topped iceberg was enclosed.

During the night they frequently tacked, to gain as much southing as possible. The fog made everything obscure. The ship was moving rapidly onward, and was much tossed about, when suddenly all became perfectly quiet; the change was so sudden that many were awakened by it from sound sleep, and all well knew that this absence of noise and motion indicated that the ship had run within a line of ice. The watch was called, and all on board were straining their eyes to discover the barrier in time to avoid accident. The ship still moving rapidly along, some faint hope remained that they were approaching a deep bay, where they might be able to satisfy themselves as to the existence of land.

"The feeling is awful," says the commander, "and the uncertainty most trying, thus to enter

within the icy barrier, blindfolded, as it were, by an impenetrable fog, and the thought constantly recurring, that both ship and crew were in imminent danger; yet I was satisfied that nothing could be gained but by pursuing this course. On we kept, until it was reported to me, by attentive listeners, that they heard the low and distant rustling of ice: suddenly, a dozen voices proclaimed the barrier to be in sight just ahead. The ship, which a moment before seemed as if unpeopled, from the stillness of all on board, was instantly alive with the bustle of performing the evolutions necessary to bring her to the wind, which was unfavourable to a return on the same track by which we had entered. After a quarter of an hour, the ice was again made ahead, and the full danger of our situation was realized. The ship was certainly embayed; and although the extent of sea-room to which we were limited was rendered invisible by the dark and murky weather, yet that we were closely circumscribed was evident from having made the ice so soon on either tack, and from the audible rustling around us. It required several hours to extricate the ship from this bay.

"Few are able to estimate the feelings that such an occasion causes to a commander, who has the responsibility of the safety of the ship and crew operating as a heavy weight upon his heart, and producing a feeling as if on the verge of some overwhelming calamity. All tends to satisfy him that nothing could guide him in safety through, or shield from destruction those who have been entrusted to his charge, but the hand of an all-wise Providence."

On the 19th they were in lat. 66° 20′ S., long. 154° 30′ E., when the commander desired Captain Hudson to make the best use of his time in exploring, and not to attempt to keep company with the other ships. We shall, therefore, follow the *Peacock* in her cruise from this day.

The *Peacock*, having got into the drift ice, with a barrier still ahead to the west, tacked to the south-east, to work up for an immense mass which appeared to be land. It was seen far beyond, towering above a lofty ice-island. This land, if such it was, had the appearance of being 3,000 feet high, forming a sort of amphitheatre, looking gray and dark, and divided into two distinct ridges or elevations throughout its entire extent, the

whole being covered with snow. As there was no probability of getting nearer to it in this quarter, they resolved to proceed to the westward, hoping to approach the object more closely on the other side. At this time the sun and the moon were both above the horizon, each throwing its light abroad. The moon was nearly full. The sun illuminated the icebergs and distant land with his deep golden rays; while the moon, in the opposite horizon, tinged with silvery light the neighbouring clouds.

By the 20th the character of the ice had entirely changed. "The tabular-formed icebergs prevailed, and there was comparatively little field-ice. Some of the bergs were of magnificent dimensions, one-third of a mile in length, and from 150 to 200 feet in height, with sides perfectly smooth, as though they had been chiselled. Others, again, exhibited lofty arches, of many-coloured tints, leading into deep caverns, open to the swell of the sea, which, rushing in, produced loud and distant thunderings. The flight of birds passing in and out of these caverns recalled the recollection of ruined abbeys, castles, and caves, while here and there a bold projecting bluff, crowned with pinnacles and

turrets, resembled some Gothic keep. A little farther onwards would be seen a vast fissure, as if some powerful force had rent in twain those mighty masses. Every noise on board, even our own voices, reverberated from the massive and pure white walls. These tabular bergs are like masses of beautiful alabaster: a verbal description of them can do little to convey the reality to the imagination of one who has not been among them. If an immense city of ruined alabaster palaces can be imagined, of every variety of shape and tint, and composed of huge piles of buildings grouped together, with long lanes or streets winding irregularly through them, some faint idea may be formed of the grandeur and beauty of the spectacle."

On the 22d the *Peacock* stood into a bay which the *Vincennes* had found closed the day before, and saw the same appearance of high land in the distance. The water was much discoloured, and of a dark dirty green. Soundings were obtained at 500 fathoms in a blue slate-coloured mud. The dipping needle pointed to 86° 16′.

On the 24th the ship was considerably damaged by coming in violent contact with floating ice, and the rudder was twisted. The ship was at the time

rapidly entering the ice, and every effort to direct her course by the management of the sails proved ineffectual. In this helpless condition, scarcely a moment passed without a new shock in some quarter or other from the ice, and every blow threatened instant destruction. The hope was not yet abandoned that some temporary expedient might be found to bring the rudder again into use, until they should be extricated from this perilous situation. A stage was therefore rigged over the stern, for the purpose of examining it, but it was found to be so much injured that it was impossible to repair it without unshipping it. In the meantime the position of the vessel became every instant more perilous, surrounded as she was by masses of floe-ice, and driving further and further into it towards an immense iceberg. All attempts to get the vessel in the other tack failed on account of her constrained position, and it was therefore thought expedient to attempt to bring her head round by hanging her to an iceberg by the ice-anchors. The anchor was attached; but just at the moment the hawser was passed on board, the ship took a start so suddenly astern that *the rope* was literally dragged out of the men's

hands before they could get a turn around the bits. The ship now drove stern foremost into the midst of the huge masses of ice, striking the rudder a second time, and rendering it useless. The wind now began to freshen, and the floe-ice to set about the ship. The sails were furled, and spars rigged up and down the ship's sides as *fenders*. After much exertion, the ice-anchors were planted by the boats in a large floe. This for a time proved effectual, but the ice continually closing in, ground, and crushed, and carried away the fenders. Soon after, the ice-anchors broke loose, and the ship was again at the mercy of the large floating masses of ice; and contact with a vast perpendicular berg appeared to be inevitable. Preparations were made to meet the expected shock. The self-possession and admirable conduct of the commander inspired courage and confidence in all. For a moment there was a hope of bringing up the vessel before she struck; the anchors again held; but soon the whole body of ice to which they were fastened came in, and the ship going astern, struck upon a piece of ice which lay between her and the berg. This afforded the last hope of preventing her from coming in contact

with it; and this hope failed also; for, grinding along the ice, she went nearly stern foremost, and struck with her larboard quarter upon the ice-island with a tremendous crash. The effects of this shock were very disastrous; but fortunately it was followed by a rebound, which, with the timely aid of the jib and other sails, carried the ship clear of the ice-island, and forced her into a small opening. Before the vessel had moved half her length, an impending mass of ice and snow fell in her wake. Had this fallen a few seconds earlier it must have crushed the vessel to atoms.

Although clear of the iceberg, the danger was still very great. The weather had an unusually stormy appearance, and the destruction of the vessel seemed almost inevitable, with the loss of every one on board. They had the melancholy alternative in prospect of being frozen to death, or perishing in a body by the dissolving of the iceberg, on which they must take refuge in case of the vessel sinking.

In order to divert the men's minds from this danger, dinner was piped as usual; and when this *was over,* the former manœuvring was resorted

to in order to keep the ship's head in the required direction. She was labouring in the swell, with ice grinding and thumping against her on all sides; every moment something, either fore or aft, was carried away; even the anchors were lifted, and every timber seemed to groan. Similar dangers attended those in the boats who had been sent to plant ice-anchors; there was no room for the use of oars. The grinding and grating of the ice, as it rose and fell with the swell, rendered great precaution necessary to prevent the boat from being swamped or crushed; and even when, after two hours of exertion, the ice-anchors were planted, the danger of returning to the ship was equally great. The sides of the icebergs could not be ascended, and to approach the berg on the side next the ship was certain destruction to the boat and crew, for the ice and water were foaming like a cauldron. At last a chance offered, although almost a hopeless one, by passing between two of these bergs that appeared on the other side of a small clear space. The boat was upon a small piece of ice, from which, by great exertions, she was launched; a few pulls of the oars brought them to the passage; the bergs were closing fast,

and no time was to be lost, as in a few seconds it would have been impossible to pass. They entered; their oars caught, and they got but half way through when the icebergs closed in upon them, and pressed the gunwales together so as almost to crush the boat; the water entered her, and she was near sinking, when the berg stopped, retreated, and, by another hard shove, they went through, and were soon alongside the ship.

In the ship, the pumps were kept going, while the ice was still accumulating round her, contracting still more the narrow space in which they were confined. At 4 P.M. they succeeded in unshipping the rudder, which was taken on board in two pieces, and the carpenters set to work to repair it. Snow now came on, and no clear sea could be seen in any direction. About six o'clock the weather cleared a little, and the wind freshened; they therefore made sail again for the clear sea, which could now be seen from the mast-head. Two hours after, the ship was unfortunately driven into a small opening leading further into the ice, towards the massive walls of the berg. By great exertions she was got round, and her head again pointed in the right direction, but shortly after

they got wedged in between two large masses of ice. At midnight the sea was observed to rise, causing much motion in the ice, and the weather threatened a gale; the only hope left was to force the ship though, and every means were employed to do so. The ice was now of much larger dimensions, and the increased sea rendered it doubly dangerous. Some of the shocks were so severe, that it was feared the ship's bows would be driven in; and on one occasion three of the chronometers were thrown out of their beds of sawdust upon their sides. The grinding and thumping on the ship was most painful, and the hope of getting free lessened every moment; for the quantity of ice between them and the sea was increasing, and the ship evidently moved with it to leeward.

The sea continued to increase until the afternoon of the 25th, when the only chance of saving the ship appeared to be in forcing her through. All the canvass that would draw was, therefore, set, and the wind favouring, they succeeded in passing the thick and solid ice, and shortly afterwards found themselves in clear water. They now hove-to, in order to ship the rudder, and were again in a situation to make sail, to extricate

themselves from a bay some thirty miles in extent, which, with the exception of the small opening by which they had entered, was apparently closed by the barrier. Shortly afterwards, the wind becoming fair, they made all sail for the outlet, which they found at midnight. It was not more than a quarter of a mile wide, but they succeeded in passing through it in a snow-storm at 2 A.M., and felt grateful to God for their providential escape.

The ship was so much damaged as to be perfectly useless for cruising among icebergs. It was, therefore, determined to proceed at once to Sidney, to effect the necessary repairs, so as to be ready as soon as possible to join the squadron.

We now return to notice the proceedings of the *Vincennes* and the *Porpoise* after the *Peacock* had left them. On the 23d January these ships passed the place through which the *Peacock* entered, and found no opening. Commander Wilkes ascribes the alternate opening and closing of the passage into the bay to a tide setting along this coast.

About thirty miles to the westward of this point the *Vincennes* met with a remarkable collec- tabular icebergs; and after passing these,

the sea was found comparatively clear, with a large open space to the southward, into which the *Vincennes* was directed. The appearance of land was noticed both to the eastward and the westward. By midnight they reached the solid icy barrier, which prevented all approach to the land, if such it was, so that they were obliged to return. This spot was called *Disappointment Bay*, and is entered in lat. 67° 04′ 30″ S., long. 147° 30′ E. The next day (the 24th) Wilkes was surprised to find that one of the officers had marked on the log-slate an opening of clear water at the bottom of the bay. It was, therefore, determined to return, although forty miles distant, in order to put the matter at rest. This was accordingly done, and, on the morning of the 25th, when the ship reached the spot, no opening was found.

The ships continued on a westward course in sight of the barrier for some days. On the 28th, they were surrounded by tabular icebergs of large size. The wind increasing to a gale, the ships were in considerable danger. They passed close along the weather-side of several bergs, and distinctly heard the roar of the surf dashing against them. The cold was intense, and the obscurity very great, and

several of the men exhausted. "We were swiftly dashing on," says Wilkes, "for I felt it necessary to keep the ship under rapid way through the water, to enable her to steer and work quickly. Suddenly many voices cried out, 'ice a-head!' then, 'on the weather-bow!' and again, 'on the lee-bow and a-beam!' All hope of escape seemed in a moment to vanish; return we could not, as large ice-islands had just been passed to leeward; so we dashed on, expecting every moment the crash. The ship, in an instant, from having her lee guns under water, rose upright; and so close were we passing to leeward of one of these huge islands, that our trysails were almost thrown aback by the eddy wind. The helm was put up to pay the ship off, but the proximity of those under our lee bade me keep my course. All was now still, except the distant roar of the wild storm that was raging behind, before, and above us; the sea was in great agitation, and both officers and men were in the highest degree excited. The ship continued her way, and as we proceeded, a glimmering of hope arose, for we had accidentally hit upon a clear passage between two large ice-islands, which in fine weather we should not dare to have ventured through.

The suspense endured while making our way between them was intense, but of short duration; and my spirits rose as I heard the whistling of the gale grow louder and louder before us, as we emerged from the passage. We had escaped an awful death, and were again tempest-tossed."

Many similar dangers were encountered that night; but at half-past four A.M. they reached a small open space, in which they hove-to, thankful to the Providence that had guided and preserved them during nine hours of great danger. At noon the gale was over, and they made sail for the ice to the south, having to pass over the very route they had just crossed.

On the morning of the 30th, the sun rose in great brilliancy, and the scene could hardly be realized as the same as that they had passed through only twenty-four hours before. A straight line could not have been drawn in any direction from the ship without passing through a dozen icebergs in the same number of miles, and every one wondered how they could have escaped in the tempest. Land was in sight, and they approached within half a mile of some dark volcanic rocks. The land rose beyond the ice to the height of 3000

feet, entirely covered with snow, and extending full sixty miles to the east and west of their position, which was lat. 66° 45′ S., long. 140° 02′ 30″. Another gale of wind came on, accompanied with sleety cutting snow, which made the floe-ice close in upon the ship. In the afternoon of the 31st, they determined to run off north-north-west for a clear sea. The gale had lasted thirty hours, and when it had abated, the commander was about to shape his course to the south again, but was led to hesitate by the report of the surgeons as to the feeble state of the men. After much consultation, he came to the conclusion that at whatever hazard to the ship and crew, it was his duty to proceed, and not give up the cruise until the ship should be totally disabled, or it should be evident to all that it was impossible to persist any longer. Accordingly, on the 2d February, they steered to the southward. The land had the same lofty appearance as before, bounded on all sides by perpendicular icy cliffs, from 150 to 200 feet in height.

They continued for some days running along the icy barrier, and on the 9th were in lat. 65° 08′, and long. 125° 19′ E. At midnight they

had a splendid display of the Aurora Australis, extending all around the northern horizon; the brushes of light frequently reached the zenith, and converged to a point near it. The land continued in sight every day, and on the 14th by measurement, they made the extent of coast then in sight seventy-five miles, and probably 3000 feet high. It was entirely covered with snow. The ships approached within a mile and a half of the barrier, and the boats were lowered, and effected a landing on an iceberg covered with stones, gravel, sand, and mud or clay. It seemed to have been detached from the land, which was about eight miles distant. A large number of these stones, &c., were taken off as trophies to commemorate the discovery of what is called the "Antarctic continent;" but it will be borne in mind that a landing on anything but ice was not effected by this expedition.

The ships again bore away to the westward. On the 15th, they landed on an iceberg covered with penguins, and procured a few as specimens. On their return, some of these birds followed the boat closely, particularly one, which at last leaped into it. It was supposed that its mate had been among those taken, and that its affection prompted it to

follow. On the 16th, the icy barrier trended to the northward, and the ships were obliged to haul to the north-east, and on the 17th the barrier was seen extending in a line a-head, and running north and south as far as the eye could reach. They were thus cut off from any further progress to the westward, and were obliged to retrace their steps. This was in lat. 64° 01′ S., and long. 97° 37′ E. Numerous whales were seen, and their blowings are said to have resembled those of a number of locomotive engines. Their close approach was a proof that they had never been exposed to the attacks of the fishers. They were of the fin-back species, and of great size.

At night the Aurora was exceedingly beautiful. "Its activity was inconceivable, darting from the zenith to the horizon in all directions, in the most brilliant coruscations; rays, proceeding as if from a point in the zenith, flashed in brilliant pencillings of light, like sparks of electric fluid in vacuo, and reappeared again to vanish, forming themselves into one body like an umbrella or fan shut up, again emerging to flit across the sky with the rapidity of light; they showed all the prismatic colours at once, or in quick succession." The best

position in which to view this phenomenon, was by lying flat upon the deck and looking up.

On the 19th, they were in hopes of getting to the position in which Cook saw the ice in 1773, being now nearly in the same latitude. It was less than one hundred miles to the westward, and little doubt could exist that its situation had not materially changed in sixty-seven years. On the 21st, they turned the head of the ship northward, and took leave of the barrier, and arrived safely at Sidney.

The third vessel engaged on this cruise, the *Porpoise*, parted company with the *Peacock* on the 22d January. They pursued a south-west course along the icy barrier, and on the 29th were in lat. 64° 46′ S., long. 137° 16′ E. At 4 P.M. on the 30th, two strange ships were seen, which were supposed to be those under the command of Captain Ross, and Lieutenant Ringgold was preparing to cheer the discoverer of the north magnetic pole; but when within a mile and a half, the strangers showed French colours, proving them to be the French discovery ships under Captain D'Urville. "Desirous of speaking and exchanging the usual and customary compliments incidental to

naval life, I closed with the strangers, desirous to pass within hail under the flag ship's stern. While gaining fast, and being within musket-shot, my intentions too evident to excite a doubt, so far from any reciprocity being evinced, I saw with surprise, sail making, by boarding the main tack on board the flag ship. Without a moment's delay I hauled down my colours, and bore up on my course before the wind."

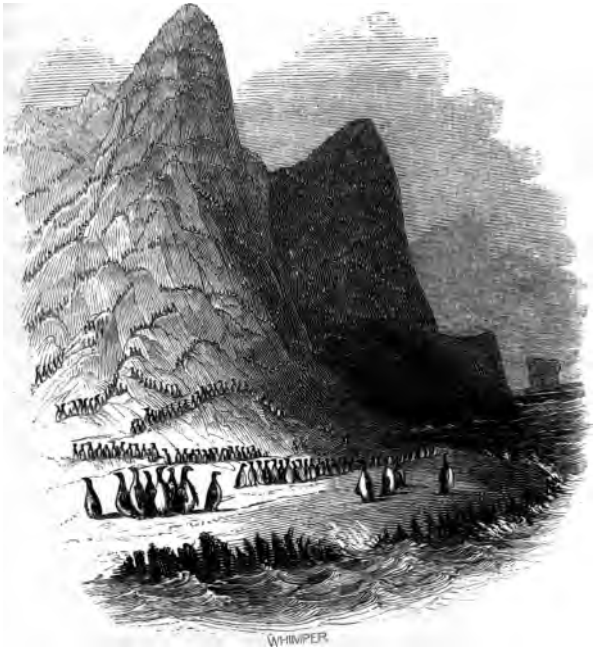
Commander Wilkes is very indignant at this cold repulse, and astonished "that the vessels of two friendly powers, alike engaged upon an arduous and hazardous service, in so remote a region, surrounded with every danger navigators could be liable to, should meet, and pass without even the exchange of common civilities, and exhibit none of the kind feelings that the situation would naturally awaken." It will be seen, however, that Lieutenant Ringgold acted altogether under a mistaken impression, Captain D'Urville being really anxious to speak the brig, and engaged in preparations for getting within hail.*

There is nothing in the proceedings of the *Porpoise* that requires further notice here. They

* See page 98.

arrived at New Zealand in March, where they found the tender, *Flying-Fish*, which had been obliged to abandon her Antarctic cruise in lat. 66° S., long. 143° E., on account of the leaky state of the vessel, and the ill health of the men.

The Aurora Australis was frequently seen by all the vessels; but perhaps the most remarkable effect is shown in the engraving at page 25, from Commander Wilkes' sketch. Black clouds were passing rapidly over the sky; an orange glow of light seemed to cover the heavens, emanating from a point over which flitted rays of the prismatic colours, directed towards the horizon, lighting up both edges of the clouds, and throwing them into bold relief. The rays darted simultaneously towards the horizon, on reaching which they seemed to be gathered, as if by magic, towards the centre, and slowly vanish, to reappear again, and fold up.



POSSESSION ISLAND.

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CHAPTER V.

VOYAGE OF DISCOVERY, UNDER CAPTAIN SIR JAMES CLARK ROSS — NOTICE OF THE FRENCH AND AMERICAN EXPEDITIONS — SAIL THROUGH THE PACK—FIND OPEN WATER—DISCOVER LAND — TAKE POSSESSION—POSSESSION ISLAND—MOUNT ERREBUS AND MOUNT TERROR—THE GREAT ICY BARRIER—VICTORIA LAND—RETURN OF THE SHIPS—UNSUCCESSFUL SEARCH FOR LAND DESCRIBED BY WILKES—PERILOUS POSITION—RETURN TO VAN DIEMAN'S LAND.

In the year 1839, H.M. ships *Erebus* and *Terror* were sent out on a voyage of discovery and research in the southern and Antarctic regions. This voyage originated in a recommendation on the part of the British Association for the Advancement of Science, and of the Royal Society of London, to the Government, for the establishment of magnetic observatories in the southern hemisphere. The two ships which conveyed the observers and the instruments to the various magnetic stations which had been agreed on, were instructed to proceed to the south, in order to

determine the position of the south magnetic pole, and, if possible, to reach it. They were also to examine the Antarctic seas in the highest attainable latitude, and to make as complete a series of magnetic observations as possible. A detailed account of every object of inquiry was furnished by the council of the Royal Society; and committees of the Geological, Zoological, and Botanical Societies, also furnished instructions for observations on points of interest connected with various departments of knowledge.

The *Erebus*, a bomb of 370 tons, of strong build and capacious hold, was placed under the command of Captain, now Captain Sir James Clark Ross; the *Terror*, of 340 tons, was the ship which had been commanded by Sir George Back in his arduous attempt to reach Repulse Bay, in the summer of 1837.* The damages she sustained during that voyage had been repaired, and she was placed under the command of Captain Crozier. The complement of each ship amounted to sixty-four persons.

By the end of September, 1839, the ships were

* A detailed account of this voyage will be found in "Winter *in the Arctic Regions.*"

fairly embarked on their voyage, in which it is not necessary to follow them until their arrival in the Antarctic regions. On the 3d May, 1840, the first piece of Antarctic ice was seen, in lat. 47° 17′ S., and long. 58° 50′ E. It was so small as scarcely to deserve the name of an iceberg, being not more than twenty feet high, and evidently fast dissolving, yet it was sufficiently solid to injure seriously any vessel that might run against it. On the 12th, the ships anchored near the entrance of Christmas Harbour, in Kerguelen Island, where an observatory was to be established. The 17th, being Sunday, was a day of rest, and Captain Ross remarks: "It was our invariable practice every Sunday to read the Church service, and generally a short sermon afterwards; and it is remarkable how very seldom during the whole period of our voyage, either the severity of the weather, or the circumstances of the expedition, were such as to interfere with the performance of this duty. Few could have had more convincing assurances of the providential interpositions of a merciful God: and I do believe there was not an individual in either of the ships who did not regret when we were unavoidably pre-

vented assembling for the purpose of offering up our prayers and thanksgivings to our Almighty Guide and Protector." The ships remained in this dreary and desolate island until the 20th July, when, having completed their magnetic observations, they proceeded to Van Dieman's Land.

On their arrival at Hobart Town, they became acquainted with the discoveries in the southern regions made during the previous summer by the French expedition, and also by the United States' expedition. The commander of the latter expedition forwarded to Captain Ross a letter on various subjects which his experience had suggested as likely to prove serviceable, under the impression that Captain Ross would still attempt to penetrate to the southward on some of the meridians visited by the American expedition: a tracing of his original chart accompanied his letter, showing the extent of his discoveries, and pointing out those parts of the coast which he thought the English ships would find most easily accessible.

After thanking Lieutenant Wilkes, and paying a just compliment to both the American and French commanders, Captain Ross expresses his

surprise that they should both have selected the very place for penetrating to the southward for the exploration of which it was publicly known the English expedition was expressly preparing. "I should have expected their national pride would have caused them rather to have chosen any other path in the wide field before them than one thus pointed out, if no higher consideration had power to prevent such an interference. They had, however, the unquestionable right to select any point they thought proper at which to direct their efforts, without considering the embarrassing situation in which their conduct might have placed me. Fortunately, in my instructions much had been left to my judgment under unforeseen circumstances; and, impressed with the feeling that England had ever *led* the way of discovery in the southern as well as in the northern regions, I considered it would have been inconsistent with the pre-eminence she has ever maintained, if we were to follow in the footsteps of the expedition of any other nation. I therefore resolved at once to avoid all interference with their discoveries, and selected a much more easterly meridian, (170° E.), on which to endeavour to penetrate to

the southward, and, if possible, reach the magnetic pole."

The chief reason for this determination was, that in this particular meridian Balleny had in 1839 attained the latitude of 69°, and there found an open sea; "and not, as had been asserted," says Captain Ross, "that I was deterred from an apprehension of an equally unsuccessful issue to any attempt we might make where the Americans and French had so signally failed to get beyond even the sixty-seventh degree of latitude. For I was well aware how ill-adapted their ships were for a service of that nature, from not being fortified to withstand the shocks and pressure they must have been necessarily exposed to had they ventured to penetrate any extensive body of ice. They would have equally failed had they tried it upon the meridian I had now chosen; for it will be seen we met with a broad belt of ice upwards of 200 miles across, which would have been immediate destruction to them to have encountered, but which, in our fortified vessels, we could confidently run into, and push our way through into the open sea beyond. Without such means, it *would be utter*ly impossible for any one, under

such circumstances, however bold or persevering. to attain a high southern latitude."

Having established the magnetical observatory at Hobart Town, Captain Ross set sail on the 13th November, 1840. In a few days they reached Enderby Island, in the Auckland group, where they made a set of magnetical observations on the 28th. On the 12th December they shaped their course for Campbell Island, which they reached next day; and on the 17th they set out on their voyage to the south, in the full assurance that they were in the possession of the best of human means to accomplish their object, and that they had "nothing to desire but the guidance and blessing of Almighty God throughout the arduous duties they were about to commence, and without which all human skill and courage must prove utterly unavailing."

On Midsummer-day of the southern regions, (21st December,) the temperature of the air during the day was never above 40°. Christmas-day was passed in a strong gale, with constant snow and rain; but it did not prevent the enjoyment of the usual festivities of the season. The first iceberg was seen on the evening of the 27th,

in lat. 63° 20′ S., and soon after fifteen were counted from the deck. Unlike the icebergs of the Arctic Seas, they presented but little variety of form, being generally of large size, and of very solid appearance, bounded by perpendicular cliffs on all sides, their tabular summits varying from 120 to 180 feet in height, and several of them more than two miles in circumference. In passing through this chain of bergs, large masses were seen continually falling from them, which formed long streams of heavy loose fragments to leeward of them. On the 31st, in lat. 66° S., and long. 171° 50′ E., a strong ice-blink in the sky, from S.W. to S.E., pointed out the situation of the pack. The streams of ice became more numerous, and at nine P.M. a line of ice was seen from the masthead, which proved to be the pack edge, which was reached at ten o'clock, just after crossing the Antarctic circle.

On New-year's day, additional provisions were served to the crews, and a complete suit of warm clothing presented to each individual. Mutual congratulations passed between the officers and crews of the ships, and the day was passed in rejoicing. Next day a berg was observed, with a

large piece of rock upon it, and nearly covered with mud and stones. Specimens of the rock were procured; it proved to be of volcanic origin, and must have been of many tons weight. On the 4th the snow ceased to fall, and the fog cleared off; the clear blue sky and a splendid sun lighted up the numerous bergs, and clothed them in the colours of the rainbow, forming a scene of much interest and grandeur. At noon they were in lat. 65° 22′ S., long. 172° 42′ E.; the magnetic dip was 81° 40′, and the variation 25° 1′. In the evening threatening clouds were seen in the north-west, with hard, rugged outlines, and bright reflections of light from their more prominent points, affording a strong contrast to the extreme darkness of the frowning mass. The setting sun also presented a remarkable appearance; it was streaked across by five dark, horizontal bands of nearly equal breadth, and flattened into a most irregular form by the greater refraction of its lower limb as it touched the horizon. The peculiar purple colour of the vapour exactly opposite the setting sun, so common in the Arctic regions, was also noticed.

On the 5th January the pack from the west-

head appeared sufficiently open to admit the ships; and although the wind was blowing directly upon the ice, so as to prevent the ships returning to open water, if desirable, yet our bold adventurers determined to dash in upon this formidable barrier. "The signal was made to the *Terror*, and we bore away before the wind, selecting the most favourable point to break through the outer edge of the pack, which, as usual, was formed of much heavier ice than the rest, and which we accomplished without sustaining any serious injury, although necessarily receiving some very heavy blows." After an hour's hard thumping the ships forced their way into some small holes of water connected by narrow lanes: the ice was found to be much lighter and more scattered than it appeared to be when viewed from the distance. It consisted chiefly of small floes of ice of the previous winter's formation, with a quantity of hummocky ice of older date, formed by great pressure into very heavy masses; but by no means of so formidable a character as was expected from the accounts of the southern barrier noticed in the American and French expeditions. *It must be* remembered, however, that the expe-

rience of Captain Ross in navigating icy seas was founded on many perilous voyages and winterings in the Arctic regions, and that he would regard as comparatively trifling those obstacles which, to navigators of less experience, would appear formidable in the extreme.

At noon the ships were entirely surrounded by ice, the clear sea being no longer visible from the mast-head: happily the sky was unclouded, and they pursued their way through the pack, choosing the clearest *leads*, and forcing the interposing barriers; the violent shocks from the ice proved how admirably the ships had been fortified for this service. In the evening a remarkable appearance of land was reported; during several hours a number of pointed hills, apparently covered with snow, were seen assuming an appearance so calculated to deceive the inexperienced eye, "that had we been prevented proceeding further, it would doubtless have been asserted, on our return to England, that we had discovered land in this position. This appearance of land was, however, nothing more than the upper part of a cloud, marking, by a well-defined but irregular line, the limit to which vapour can ascend in these latitudes; below is

vapour in every degree of condensation, above, the clear cold space which vapour can never attain. It is always near the margin of the ice that these appearances of land are most remarkable and most deceptive. It proved a useful lesson to some of our new hands, who could not be persuaded it was not land until we had actually passed over the place of their baseless mountains."

Whales, seals, and numerous birds, continued to be abundant. The penguins followed the ships, answering the call of the sailors, who imitated their cry; and although they could not scramble over the ice so fast as the ships sailed past it, they proceeded rapidly enough when they got into the water, and a flock of them followed in the ship's wake, playing about like so many porpoises.

On the 6th, a strongly marked *water-sky* to the south-east excited hopes of being able to reach an open sea at no great distance, but the ice was too close to allow the ships to force through it; they were therefore obliged to heave-to in a small hole of water, out of which they could not escape in a southerly direction, and there wait until the ice opened. By an observation taken at noon on the

7th they found they had been driven by a current twenty-six miles to the south-east, which seemed to indicate an open sea in that direction. Early on the 8th, the ice having slackened a little, and with the assistance of a light wind, the ships advanced several miles through the pack; it then fell calm, which enabled the ice to slacken considerably; a fresh breeze springing up, they forced their way rapidly onward, and on the 9th were rejoiced to find themselves once more in a clear sea. They continued on at a moderate rate, in spite of fog, and snow, and a violent storm. At noon, on the 10th, the weather cleared, and displayed a most cheering and extensive view, not a particle of ice being seen in any direction from the mast-head. This was in lat. 70° 23′ S., long. 174° 50′ E.; and the magnetic dip had increased to 85°.

They now steered in the direction of the south magnetic pole, but their hopes of attaining that interesting position were soon disappointed. A strong *land-blink* appeared in the horizon as the ships advanced, and on the 11th land was seen rising in lofty peaks entirely covered with perpetual snow; it was then more than one hundred miles distant, and the highest peak was named

after Lieut.-Colonel Sabine. As they advanced towards the land, other mountainous ranges were seen extending to the right and left of that first discovered. On approaching the land, they steered towards a small bay, the southern promontory of which was named *Cape Downshire*, and its northern point *Cape Adare*. Some rocks that were observed to lie several miles to the north and west of Cape Adare, showing their black summits amongst the white foam of the breakers, were named *Dunraven Rocks*. "It was a beautifully clear evening, and we had a most enchanting view of the two magnificent ranges of mountains, whose lofty peaks, perfectly covered with eternal snow, rose to elevations varying from seven to ten thousand feet above the level of the ocean. The glaciers that filled their intervening valleys, and which descended from near the mountain summits, projected in many places several miles into the sea, and terminated in lofty perpendicular cliffs. In a few places the rocks broke through their icy covering, by which alone we could be assured that land formed the nucleus of this, to appearance, enormous iceberg." The range of mountains, extending to the north-west, was named *Admiralty*

Range, the principal points of which were named after the Lords of the Admiralty. This land "restored to England the honour of the discovery of the southernmost known land, which had been nobly won by the intrepid Bellinghausen, and for more than twenty years retained by Russia."

Captains Ross and Crozier, and some of the officers of the *Terror*, set out in a boat with a view to land; but the shores of the mainland were found so completely covered with ice, projecting into the sea, and the surf so heavy along its edge, as to prevent the attempt. With some difficulty and danger they landed upon an island, and took possession of these newly discovered lands in the name of her Majesty Queen Victoria; and, in planting our country's flag amidst the cheers of the party, a toast was drunk to the health and happiness of her Majesty and his Royal Highness Prince Albert. The island was named *Possession Island*, and is situated in lat. 71° 56′, and long. 171° 7′ E. It is composed entirely of igneous rocks, and accessible only on its western side. No kind of vegetation was seen, "but inconceivable myriads of penguins completely and densely covered the whole surface of the island, along the

ledges of the precipices, and even to the summits of the hills, attacking us vigorously as we waded through their ranks, and pecking at us with their sharp beaks, disputing possession; which, together with their loud coarse notes, and the insupportable stench from the deep bed of guano, which had been forming for ages, and which may, at some period, be valuable to the agriculturists of our Australasian colonies, made us glad to get away again, after having loaded our boats with geological specimens and penguins." It required a long and a heavy pull to regain the ships, which they had no sooner done than a thick fog came on, with a strong northerly breeze, which a few minutes earlier would have prevented their return to the ships. Next morning there was a southerly gale with thick weather, so that they stood to the eastward in a state of great anxiety and watchfulness, not sorry, however, to find the ship labouring in a heavy sea—a sure indication of a great space of open water to windward in the direction they were most anxious to get.

Whales were very numerous about this coast. Thirty were counted at one time in various directions; and during the day (the 14th) their blasts

were seen wherever the eye was directed. They were chiefly of large size, and of the hunch-back kind: only a few sperm whales were distinguished among them by their peculiar manner of "blowing" or "spouting." "Hitherto beyond the reach of their persecutors, they have here enjoyed a life of tranquillity and security; but will now, no doubt, be made to contribute to the wealth of our country in exact proportion to the energy and perseverance of our merchants; and these, we well know, are by no means inconsiderable." There were great quantities of molluscous and other small marine animals, on which the whales seemed to be feeding; and large flocks of the young of the Cape pigeon were playing about and feeding with them.

On the 15th, a fine view was obtained of a magnificent chain of mountains which had been imperfectly seen some days before, stretching away to the southward. The weather being beautifully clear, they formed a grand and magnificent scene; the mountains were completely covered, to their sharply-pointed summits, with snow; and the elevation varied from 12,000 to 14,000 feet and upwards. They were named after

the eminent philosophers of the Royal Society and British Association, at whose recommendation the Government was induced to send out this expedition.

While measuring some angles for the survey, Captain Ross suddenly caught sight of what seemed to be an island, but which certainly was not to be seen two or three hours before. It was above 100 feet high, and nearly the whole of the summit and eastern side perfectly free from snow. At the same time it was also noticed that a large iceberg, which had been distinctly noticed on the same spot, had disappeared, or rather had turned over, unperceived by those on board, and presented a new surface covered with earth and stones. So exactly was it like an island, that nothing but landing on it would have proved its real nature, had it not been for the above satisfactory explanation, and a rolling motion in the berg, which continued some time.

On the morning of the 15th, when distant between twenty and thirty miles from the land, it presented a remarkable appearance. A bank of dense clouds concealed the lower parts of the mountains, and their snowy pointed summits were alone seen above, *the cloud* contrasting strongly with the beauti-

fully clear blue sky; and conveying to the mind an idea of elevation beyond their real height. On the 16th, the ships were detained by adverse winds; but on the 17th, a favourable breeze enabled them to steer on a more southerly course. New portions of land opened to view as they proceeded; these received various names. The evening of the 20th is described as being beautifully fine, and as the wind was favourable, all sail was crowded on both ships. "The scene was most animating and cheering; the harassing, tedious, and laborious work of contending against adverse winds and weather were forgotten, in the full expectation we now enjoyed of soon passing into a higher latitude than had ever before been attained; and few on board either of the ships closed their eyes that night, so great were their anxiety and excitement."

Fog and snow limited the view for some hours; but on the 21st, while waiting for clear weather, a mountain was discovered apparently the highest which had yet been seen. It was named *Mount Melbourne*, and its form had so general and striking a resemblance to Mount Ætna, that it went by that name for several days. A neighbouring high-peaked mountain was named *Monteagle*.

The ships had often to contend against a northerly current, which, together with a southerly wind, carried them back to the northward. On the present occasion, the wind fell calm, and the people on board could do nothing but watch the gradually retrograde motion of the ships. The night of the 22d was the most beautiful that had been seen in these latitudes; the sky was perfectly clear and serene, and at midnight, when the sun was skimming along the southern horizon at an altitude of about two degrees, the sky overhead was of a most intense indigo blue, becoming paler in proportion to the distance from the zenith. Soundings were obtained in 300 fathoms, and the dredge was put over and allowed to trail along the bottom for two or three hours. Many animals were thus brought up, amongst which were several entirely new forms of creatures.

On the 23d, the ships were able to recover their southern position, and at noon were in lat. 74° 20′ S. In the evening, having good grounds for believing that they had reached a higher southern latitude than had ever yet been attained, the time was passed in general rejoicing. Observations at noon of the 25th, gave lat. 74° 44′, long.

169° 30′; the dip was 87° 54′ S.; and the variation 67° 13′; from which it was deduced that the place of the magnetic pole was distant 249 miles. In the present position of the ships Mount Melbourne and Mount Monteagle were seen to great advantage; the immense crater of the former, and the more pointed summit of the latter, rose high above the contiguous mountains, forming two of the more remarkable objects of this wonderful and magnificent mass of volcanic land.

A heavy pack of ice, which extended forty or fifty miles from the shore, impeded the progress of the ships; but on the 26th they were again in clear water. As they pursued their way along the pack edge to the southward, many beautiful snowy petrels and some penguins were seen. The temperature of the air varied only one degree during the twenty-four hours, from 25° to 26°, which was sufficiently low to freeze into ice the sprays that fell on board the ship, and soon accumulated such a load about the bows as to keep the men continually at work in clearing it away. At noon the dip was 88° 33′, so that the magnetic pole was distant only 174 miles.

On the 27th, the ships got further from the

pack, and in doing so the temperature of the sea at the surface gradually rose from 28° to 31° at about twelve miles off. At noon, in lat. 75° 48′, and long. 168° 33′ E., an island was discovered, which was named after Sir John Franklin. A party landed, with some difficulty, to take possession. This island is about twelve miles long, and six broad, and is composed wholly of igneous rocks; the northern side presents a line of dark precipitous cliffs, between five and six hundred feet high, marked with broad white bands, probably aluminous, which gave a strange aspect to the cliffs. No vegetation was discovered, not even a lichen or piece of sea-weed; so that, as Captain Ross observes, the vegetable kingdom has no representative in Antarctic lands. The white petrel and the rapacious skua-gull had their nests on the ledges of the cliffs; and several seals were seen.

With a favourable breeze and very clear weather, the ships stood to the southward, close to some land which had been in sight since the preceding noon; it proved to be a mountain 12,400 feet above the sea level, emitting flame and smoke in great profusion. The discovery of an active volcano in so high a southern latitude was indeed

remarkable; it was named *Mount Erebus*, and an extinct volcano to the eastward, little inferior in height, it being 10,900 feet high, was called *Mount Terror*. These mountains belonged to a mainland which, as the ships approached, presented a low white line as far as the eye could reach to the eastward. This proved to be a perpendicular cliff of ice between 150 and 250 feet above the level of the sea, perfectly flat and level at the top, and without any fissures or promontories on its even seaward face; nothing could be seen beyond it except the summit of a lofty range of mountains, extending to the southward as far as the 79th degree of latitude. These mountains were named after Captain Sir W. E. Parry. This obstruction was a great disappointment to all; because, instead of proceeding southward, the course had now to be altered to the eastward. The whole coast from the western extreme point now presented an uniform vertical cliff of ice about two or three hundred feet high. The eastern cape at the foot of Mount Terror was named after Commander Crozier, of the *Terror*; and the western promontory, at the foot of Mount Erebus, was named *Cape Bird*, after the senior lieutenant of the *Erebus*.

On the afternoon of the 28th, "Mount Erebus was observed to emit smoke and flame in unusual quantities, producing a most grand spectacle; a volume of dense smoke was projected at each successive jet with great force, in a vertical column, to the height of between 1,500 and 2,000 feet above the mouth of the crater, when, condensing first at its upper part, it descended in mist or snow, and gradually dispersed, to be succeeded by another splendid exhibition of the same kind in about half an hour afterwards, although the intervals between the eruptions were by no means regular. The diameter of the columns of smoke was between two and three hundred feet, as near as we could measure it; whenever the smoke cleared away, the bright red flame that filled the mouth of the crater was clearly preceptible; and some of the officers believed they could see streams of lava pouring down its sides until lost beneath the snow, which descended from a few hundred feet below the crater, and projected its perpendicular icy cliff several miles into the ocean. Mount Terror was much more free from snow, especially on its eastern side, where were numerous little conical crater-like hillocks, each of which

had probably been at some period an active volcano."

The day was remarkably fine, and with a favouring breeze the ships made good progress to the E.S.E., close along the lofty perpendicular cliffs of the icy barrier. By noon on the 29th they had sailed by its side in clear water upwards of a hundred miles, and still found it stretching to an indefinite extent in an E.S.E. direction. The temperature of the sea at the depth of 300 fathoms was 34½°, at 150 fathoms 33°, and at the surface 31°, the air being 28°. This great depth of water proved that the great icy barrier was formed upon a ledge of rock, and that its outer edge was not resting on the ground. On the 30th, they had traced the barrier 160 miles, and were surprised to have met with no icebergs on their course; but this is well accounted for by Captain Ross: the temperature of the atmosphere and the ocean in summer differ from each other only a few degrees; but in winter, when this difference often amounts to seventy or eighty degrees, the unequal expansion of those parts of the ice exposed to so great a difference of temperature produces a separation of large portions. As soon as the

winter breaks up, these large portions or icebergs, being driven by the prevailing southerly winds, drift to the north and rapidly melt away. Captain Ross remarks, that he has often, in the Arctic regions, "witnessed the astonishing effects of a sudden change of temperature during the winter season, causing great rents and fissures of many miles in extent; especially on the fresh water lakes of those regions, where the ice being perfectly transparent, affords better means of observing the effects produced. A fall of thirty or forty degrees of the thermometer immediately occasions large cracks, traversing the whole extent of the lake in every variety of direction, and attended with frequent loud explosions; some of the cracks opening in places several inches by the contraction of the upper surface in contact with the extreme cold of the atmosphere. In these regions we have also witnessed the almost magical power of the sea in breaking up land-ice, or extensive floes of from twenty to thirty feet thick, which have, in a few minutes after the swell reached them, been broken up into small fragments by the power of the waves." But this extraordinary barrier of Antarctic ice, of probably more than 1,000 feet

in thickness, crushes the undulations of the waves, and yields nothing to their violence. "It is a mighty and wonderful object, far beyond anything we could have thought or conceived." *

The ice-blink of the barrier continued to be seen far to the southward; and on the 31st, a number of icebergs, evidently detached from it, were met with: they were chiefly of the tabular form, perfectly flat on the top, precipitous in every part, and from 150 to 200 feet high. Captain Ross felt convinced, from finding them at this season so near the point of their formation, that they were resting on the ground; on sounding, a stiff green mud was found at 260 fathoms, so that it was evident that all these bergs, after having broken away from the barrier, had grounded on this curious bank, situated about 200 miles from Cape Crozier, the nearest known land, and about sixty miles from the edge of the barrier.

During several days, the ships continued to trace the barrier from which they were separated, several miles, by a tolerably close pack of ice. On the 9th February, they succeeded in getting between the pack and the barrier, in which

* See the engraving at page 172.

was a remarkable looking bay, the only indentation which had yet been perceived throughout its whole extent. They approached within a quarter of a mile of the barrier, which far overtopped the mast-heads of the ships. The bay they had entered was formed by a projecting peninsula of ice, terminated by a cape 170 feet high; but at the narrow isthmus which connected it to the great barrier it was not more than 50 feet high, so that its upper surface could be seen from the mast-heads: it appeared to be quite smooth, and conveyed to the mind the idea of an immense plain of frosted silver. Gigantic icicles hung from every projecting point of its perpendicular cliffs, proving that it sometimes thaws, which otherwise could not have been believed; "for," it is remarked, "at a season of the year equivalent to August in England, we had the thermometer at 12°, and at noon not rising above 14°. This severity of temperature is remarkable also when compared with our former experience in the northern seas, where from every iceberg you meet with, streams of water are constantly pouring off during the summer."

At this low temperature, and under the shelter

of the barrier, young ice is quickly formed; and for some time it was doubtful whether the ships could force their way through it to the open water. They did so, however, by the aid of a favourable breeze, and the exertions of the crew in breaking up the ice before the ships; and no sooner had they got into a clearer space, than the wind came directly against them from the westward, so that had they lingered longer near the barrier, or had the wind shifted half an hour sooner, the ships would have been frozen up in a most dangerous situation. At noon, (8th February,) they were in lat. 77° 56′ S., long. 190° 15′ E., and at four o'clock in the afternoon were again enabled to press all sail on the ships, running to the westward close along the edge of the main pack: the wind freshening from the northward, drove it quickly down upon the barrier; and soon the channel by which the ships had escaped was filled by heavy ice closely pressed together, so that not the smallest hole of water could be seen amongst it.

The ships continued for some days to coast along the western edge of the main pack, seeking for an opening; but the approach of winter

rendered sailing more and more difficult; and foggy weather made it dangerous: icebergs now became numerous, one of which was nearly four miles long. During a gale, the waves, as they broke over the ships, froze as they fell on the decks and rigging, and covered the people's clothes with a thick coating of ice. In the afternoon of the 13th, they succeeded in getting into a more open sea.

It was now necessary to relinquish the attempt to penetrate to the eastward; and the further examination of the barrier was deferred to the following season. Another attempt was therefore made to reach the magnetic pole, and to seek a harbour in its vicinity for wintering.

The weather had now become milder, the temperature of the air having risen to 32°. On the 14th, they were in lat. 76° 22′ S., long. 178° 16′ E. The dip was 87°, so that the magnetic pole was about 360 miles distant. On the 16th, Mount Erebus was again seen, and the weather becoming clearer, a splendid view of the whole line of coast was obtained: the eruptions of the volcano were magnificent, the flame and smoke being projected to a great height. On the 17th

the ships got within ten or twelve miles of the low coast line, when further progress was stopped by heavy closely packed ice. They endeavoured to struggle to a small islet off a low point of land to the north-westward, which it was hoped might afford a place of refuge during the winter; but the intervening space of fifteen or sixteen miles between it and the ships, being filled by a solid mass of land ice, rendered the approach hopeless. They were at this time in lat. 76° 12′ S., long. 164° E.; the magnetic dip was 88° 40′, so that they were only 160 miles from the pole.

"Had it been possible," says Captain Ross, "to have found a place of security upon any part of this coast where we might have wintered in sight of the brilliant burning mountain, and at so short a distance from the magnetic pole, both of those interesting spots might easily have been reached by travelling parties in the following spring; but all our efforts to effect that object proved quite unsuccessful; and although our hopes of complete attainment were not realised, yet it was some satisfaction to know that we had approached the pole some hundreds of miles nearer than any of our predecessors; and from the multitude of obser-

vations that were made in so many different directions from it, its position may be determined with nearly as much accuracy as if we had actually reached the spot itself.

"It was nevertheless painfully vexatious to behold, at an easily accessible distance under other circumstances, the range of mountains in which the pole is placed, and to feel how nearly that chief object of our undertaking had been accomplished; and but few can understand the deep feelings of regret with which I felt myself compelled to abandon the perhaps too ambitious hope I had so long cherished, of being permitted to plant the flag of my country on both the magnetic poles of our globe; but the obstacles which presented themselves being of so insurmountable a character was some degree of consolation, as it left us no grounds for self-reproach; and as we bowed in humble acquiescence to the will of Him who had so defined the boundary of our researches, with grateful hearts we offered up our thanksgivings for the large measure of success which he had permitted to reward our exertions."

A range of mountains in the extreme west, supposed to be the seat of the southern magnetic

pole, was distinguished by the name of H. R. H. Prince Albert; and the whole of the southern land which had been discovered, the continuity of which had been traced to the seventy-ninth degree of latitude, received the name of our most gracious sovereign Queen Victoria.

The ships now commenced the laborious task of retracing their way through the pack to the eastward; but the young ice increased so rapidly that it was for some time doubtful whether they would not yet be frozen fast. On getting clear of the heavy pack, the whole surface of the sea was one continuous sheet of ice, through which they advanced very slowly, sometimes only a few yards in an hour. The ice was broken by rolling the boats upon it; for although it was sufficiently strong to prevent the ships sailing through it, yet it was not strong enough to bear the weight of a party of men to cut a passage with saws. The whole night was passed in this fatiguing work, and by ten o'clock next morning, the ships were enabled to bear away to the northward in clear water.

At midnight on the 18th, several stars were observed, the first that had been seen since entering

the pack; an indication of the rapid approach of winter. The coast line was followed for some days, and a secure harbour for wintering in was anxiously looked for; but all the indentations of the coast were completely filled with solid ice of many hundred feet in thickness. In one case, a body of ice was distinctly traced as a continuous mass descending from near the tops of the mountains several miles into the sea, and terminated by stupendous cliffs.

In the afternoon of the 25th, a good view of Victoria Land was obtained. "The whole of the land being perfectly free from cloud or haze, the lofty range of mountains appeared projected upon the clear sky beyond them, beautifully defined; and although of a spotless white, without the smallest patch of exposed rock throughout its whole extent to relieve it, yet the irregularities of the surface, the numerous conical protuberances and inferior eminences, and the deeply marked valleys, occasioned many varieties of light and shade that destroyed the monotonous glare of a perfectly white surface, but to which it is so very difficult to give expression, either by the pencil or description."

As it was now quite impossible to penetrate further to the westward, and no winter harbour could be reached, Captain Ross determined to proceed northward in search of any lands that might lie between Cape North of Victoria Land and Balleny Islands. This entailed the necessity of recrossing the pack two hundred miles broad, which had already been passed through near the Antarctic circle; but it was hoped that the pack might have been driven so far to the northward as to leave a clear passage between it and the easternmost point of the American discoveries.

Gales of wind accompanied by fogs and snow rendered the navigation embarrassing and dangerous for some days; and even during periods of calm, the heavy swell of the waves was equally perilous, causing the ships to drift upon the pack or upon icebergs; the high sea preventing the use of boats to tow the ships clear of them, and defeating every effort to take advantage of any feeble wind which in smooth water might have proved effectual. This constant heavy swell renders the navigation of the Antarctic seas much more hazardous than that of the Arctic ocean.

At noon on the 28th, they came to the edge

of the northern pack, in lat. 69° 57′ S., and long. 167° 5′ E. It appeared as one unbroken mass of ice, with many large bergs among it so firmly cemented by the late cold, that not the smallest hole of water could be seen in it. With a strong breeze from the westward, and clear weather, the ships passed along the edge of the pack amidst great quantities of pancake ice, which formed rapidly under the protection of the pack at a temperature of 20°. The ships sustained some very heavy blows, and soon after midnight, (March 2nd,) the shackle of the *Terror's* bobstay was broken, and they had to wait to replace it. This was a work of some difficulty and danger in the dark night; the ship's bows and rigging being thickly encrusted with ice, and so much swell in the sea as to endanger the lives of the brave fellows that were engaged for nearly two hours slung over the bows, up to their necks in water at every plunge of the ship; and this with the thermometer at 12° below the freezing point.

At 5 P.M. land was discovered. It appeared to be two islands nearly joining, and forming probably part of the group discovered by Balleny, in February 1839. At noon, on the 4th of

March, the ships were in lat. 66° 44′ S., long. 165° 45′ E., in the same position in which Balleny was. Strong appearances of land were seen to the westward, high, and broken into islands; but thick stormy weather prevented a further examination. The deep plunges of the ships frequently brought their bowsprits into violent contact with heavy pieces of ice, which it was impossible to avoid, so that some damage was done that had to be repaired. They then made all sail to the N.E., on account of the wind having increased to a gale from E.S.E., thereby placing the ships in a very critical situation; for on the chart which Lieutenant Wilkes sent to Captain Ross of the discoveries of the expedition under his command, a range of mountainous land is laid down, extending about sixty miles in a S.W. and N.E. direction; its centre being in lat. 65° 40′, and long. 165° E., with the eastern extreme of the barrier in 167½° E., and thus presenting a formidable lee shore to the ships in their present position. They were therefore in a state of considerable anxiety and uncertainty for some hours, as to whether the ships could weather the land and barrier. In the evening they recrossed the

Antarctic circle, having been to the southward of it since the 1st January, a period of sixty three days. As night advanced, the cry of the penguin was heard above the storm, which, added to the increasing quantity of heavy loose ice, contributed to increase the apprehension of dropping down upon the land or barrier, although they had frequently met with these birds at several hundreds of miles from any known land. The extreme darkness of the night and the thick weather prevented their seeing to any distance before them, and kept all hands in a state of anxious vigilance throughout the continuance of the gale. Towards morning there was a favourable change of weather, and at daylight, (5th March,) they were desirous of sighting the land which had occasioned them so much fatigue and uneasiness during the previous stormy night, and shaped their course accordingly. At noon they were in lat. 65° 34′ S. and long. 167° 40′ E., and between forty and fifty miles from the north-east extreme of Wilkes's land. "We had a moderate breeze from the eastward, and a beautifully clear day, so that land of any great elevation might have been seen at a distance of sixty or seventy miles. As we ad-

vanced on our course," says Ross, "in eager expectation of 'making the land,' our surprise and disappointment may be imagined when no indications of it were to be seen at sunset, although we were not more than twelve or thirteen miles from its eastern extreme as laid down in Lieutenant Wilkes's chart; and we began to suspect that from having had but little experience of the delusive appearances in these icy regions, he had mistaken for land some of the dense well-defined clouds which so continually hang over extensive packs of ice,—a mistake which we had ourselves, on many occasions, to guard against, when appearances were so strong, for several days in succession, that few in either ship could be persuaded that it was not really land, until we actually sailed over the spot." At daybreak, (March 6th,) a most extensive view was obtained in every direction, the sky and horizon being perfectly clear; the mast-heads of both ships were crowded with officers and men, anxious to get the first glimpse of the anticipated shores, but neither mountains nor barrier were to be seen. At noon, in lat. 64° 51′ S., long. 164° 45′ E., the ships were very nearly in the centre of the mountainous

patch of land laid down in Wilkes's chart, as forming part of the "Antarctic continent." The remainder of the day, which was exceedingly pleasant, was passed in searching for the supposed land; steering a course now more to the westward, and then north-west, until darkness put an end to the search.

Early in the morning, (March 7th,) while running before a strong easterly breeze, the ships became embayed in a deep bight of the pack. They were also much hampered by extensive fields of pancake ice. At noon, they succeeded in getting into clear water; but the wind falling calm, the heavy easterly swell was driving them down again upon the pack, in which eighty-four large icebergs were counted from the mast-head, and some hundreds of smaller dimensions. "We found we were fast closing this chain of bergs, so closely packed together that we could distinguish no opening through which the ships could pass, the waves breaking violently against them, dashing masses of pack ice against the precipitous faces of the bergs; now lifting them nearly to their summit, then forcing them again far beneath their water-line, and sometimes rending them into a multitude

of brilliant fragments against their projecting points.

"Sublime and magnificent as such a scene must have appeared under different circumstances, to us it was awful, if not appalling. For eight hours we had been gradually drifting towards what to human eyes appeared inevitable destruction: the high waves and deep rolling of our ships rendered towing with the boats impossible, and our situation was more painful and embarrassing from our inability to make any effort to avoid the dreadful calamity that seemed to await us.

"In moments like these, peace and comfort of mind could only be obtained by casting our cares upon that Almighty power which had already so often interposed to save us, when human skill was wholly unavailing. Convinced that he is under the protection and guidance of a merciful God, the Christian awaits the issue of events, firm and undismayed, and with calm resignation prepares for whatever He may order. This serenity of mind surprises and strengthens, but never forsakes him; and thus, possessing his soul in peace, he can with the greater advantage watch every change of circumstance that may present itself as a means of escape.

"We were now within half a mile of the range of bergs. The roar of the surf, which extended each way as far as we could see, and the crashing of the ice, fell upon the ear with fearful distinctness, whilst the frequently averted eye as immediately returned to contemplate the awful destruction that threatened in one short hour to close the world, and all its hopes, and joys, and sorrows, upon us for ever. In our deep distress, 'we called upon the Lord, and he heard our voices out of his temple, and our cry came before him.' A gentle wind filled our sails; hope again revived, and the greatest activity prevailed to make the best use of the feeble breeze: as it gradually freshened, our heavy ships began to feel its influence, slowly at first, but more rapidly afterwards; and before dark we found ourselves far removed from every danger."

This was an answer to prayer. Well may Captain Ross exclaim in grateful acknowledgment, in the words of the inspired Psalmist, "O Lord my God, great are the wondrous works which thou hast done, like as be also thy thoughts, which are to us-ward: and yet there is no man that ordereth them unto thee. If I *should declare* them, and speak of them, they

should be more than I am able to express." Psalm xl. 6, 7.

A peaceful night followed this fatiguing and anxious day, the ships running to the westward under moderate sail, favoured by a fresh south-east breeze, and the bright light of the full moon, increased at times by brilliant displays of the Aurora Australis. The ships continued to hover about the position in which land was marked on the American chart. At noon, on the 9th, they were in lat. 64° 20′ S. and long. 164° 20′ E., not far from the spot where Lieutenant Wilkes must have supposed he saw the land; "but having now searched for it at a distance varying from fifty to seventy miles from it to the north, south, east, and west, as well as having sailed directly over its assigned position, we were compelled to infer that it has no real existence."

On the 8th and 9th, the weather was obscured by snow; but on the 10th it again became clear, and on approaching the pack, a strong blink indicated its position before dark. Many icebergs were passed during the day: they had been much worn away by the long continued action of the waves, and consequently presented a greater va-

riety of figure than any that had been previously met with. The temperature was mild, notwithstanding occasional showers of snow. The westerly swell prevented the ships from making any considerable progress. The object was to arrive at lat. 66° S., in long. 146° E., the position, according to M. Gauss's theory, of the south magnetic pole; but although the observations made by Ross in this expedition determined the true position of the south magnetic pole to be nearly in 76° instead of 66° S., yet, as observations at the point indicated by M. Gauss might prove of interest, Captain Ross determined to devote a few days to approach it as nearly as possible, although, from the very late period of the season, he had no hope of attaining the spot itself; nor was it of so much importance to do so now, as both the American and French expeditions had made magnetic observations in its neighbourhood, which proved the magnetic pole to be much further south than M. Gauss had supposed.

On the 20th, they succeeded in getting within forty-five miles north of the spot in question, the main pack preventing a nearer approach. The dip was here observed to be 85° 5′, the distance

from the true magnetic pole being about 600 miles.

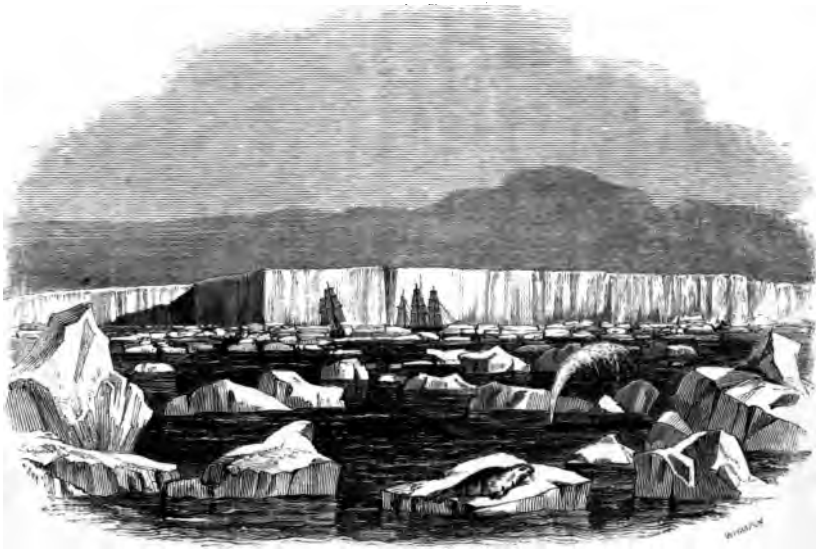
Only one object now remained to accomplish before seeking a milder climate. On the voyage between Kerguelen Island and Van Dieman's Land, they had crossed the line of no variation in lat. 46° S., and long. 134° 30′ E.; and it appeared desirable to ascertain its situation in as high a latitude as circumstances admitted, and to recross it in an intermediate latitude on the way to Hobart Town; and by thus determining its place at three distinct and nearly equidistant points, the nature of the curve by which it reaches the magnetic pole might be computed.

On the night of the 23rd, the line of no variation was crossed in lat. 62° S., and long. 135° 50′ E.; the westerly variation then rapidly increased until the 28th, when in lat. 57° 20′, and long. 127° 49′ E., it amounted to 8° 47′ W.; and again it regularly diminished, until they recrossed the line of no variation in lat. 54° 30′ S., and long. 133° E.

On the 6th April, they came in sight of Van Dieman's Land, and the next morning were greeted with the warm and affectionate congratulations of

the Governor, Sir John Franklin. In concluding the narrative of the first season's navigation of the Antarctic seas, Captain Ross observes: "Amongst the many events which had occurred to call forth our gratitude to God, for his guidance and preservation during the arduous and hazardous operations in which we had been engaged, it was a source of no ordinary gratification to me, to reflect that the execution of the service had been unattended by casualty, calamity, or sickness of any kind, and that every individual of both ships had been permitted to return in perfect health and safety to this our southern home."

AURORA AUSTRALIS.



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CHAPTER VI.

SECOND ANTARCTIC VOYAGE UNDER ROSS—DETENTION IN THE PACK—DANGEROUS SITUATION OF THE SHIPS—ESCAPE FROM THE PACK—THE GREAT ICY BARRIER—APPEARANCE OF LAND—COLLISION OF THE SHIPS—DANGER FROM ICEBERGS—RETURN TO FALKLAND ISLANDS—THIRD EXPEDITION—LAND DISCOVERED, AND GOOD WHALE-FISHERY WITHIN TEN DAYS' SAIL OF THE FALKLANDS—RETURN OF THE SHIPS TO THE CAPE OF GOOD HOPE.

In July, 1841, the *Erebus* and the *Terror* quitted Hobarton; and, after spending some months at New Zealand, set out in December on a second Antarctic voyage. On the 14th, they were in lat. 56° 20′ S., long. 148° 8′ W. The next day, the temperature of the sea fell rather suddenly from 36° to below 34°, thus indicating the presence of ice; and, accordingly, a few hours after, icebergs were seen ahead; and in passing within half a mile of the largest, the temperature of the sea was rather below 33°. At noon on the 16th, they were in lat. 58° 36′, and long.

146° 43′ W.; and this being the meridian in which they intended to penetrate to the Antarctic seas, the course was changed to due south. "My chief object in selecting this meridian," says Captain Ross, "was the hope that it would lead to the discovery of land, which I was led to expect by reason of the low latitude in which the ice had been met with by former navigators,—at any rate I thought it better to attain the eastern point of the great southern barrier, (at which our operations last year had been interrupted by the setting in of the winter,) by a route as widely different as practicable from that by which we had before approached it; and thus enlarge the boundary of our examination of those regions."

During the night of the 17th, they passed a few icebergs, and many very heavy loose pieces, doubtless fragments of broken-up bergs, sufficiently large to destroy any ordinary ship that might strike against them at the rate the *Erebus* and *Terror* were now sailing. Fog and snow-showers, with intervals of clear weather, were the usual signs of the Antarctic summer. At five P.M. a strong ice-blink appeared in the sky to the S.E., and the temperature of the sea at midnight falling to 29°,

gave notice of their approach to a large body of ice; and at three o'clock the following morning (the 18th), the main pack was seen stretching across their course from east to west. The ships were at once run into the pack, and made good way through it, the ice being remarkably light and very open; but on proceeding south, it became heavier and more strongly pressed together, until, having penetrated about thirty miles, they were obliged to steer more to the westward. The temperature of the sea was 28°, and that of the air 32°.

On advancing through the pack, the ice was observed in some places to be very much stained by a yellowish substance, which had also been noticed the year before on the ice off Mount Erebus, and was supposed to consist of dust ejected from that volcano. A quantity of this colouring-matter was sent to Ehrenberg, the celebrated microscopic naturalist, who found it to consist of countless myriads of an entirely new and minute form of organic life, which he observes arrived at Berlin in 1844 in a living state, and of which "almost all the separate atoms are independent siliceous-shelled creatures."

The ships continued slowly struggling on through the pack, and on the 1st January, 1842, had advanced 250 miles through it. Its breadth in the preceding season did not exceed 200 miles, and they therefore hoped to be soon in open water. In this, however, they were greatly disappointed. Day after day they continued to be inclosed in their icy prison, sometimes making a little way through it, and at other times drifting with it, and losing the little southing they had gained by great exertion. One cannot, therefore, be surprised at the unusual wish expressed for a gale of wind to arise, by which alone they could expect the dense pack to be dispersed, and the ships liberated.

The wished-for gale at length arrived. On the 16th January, there was a gentle swell from the westward, which increased greatly on the 17th. On the 18th there was a dense fog with snow and rain. To prevent the ships from being separated in the fog, they had some days before been made fast to the largest piece of ice that could be found, mooring it between the ships to prevent their coming in collision with each other, and in this novel mode of sailing they advanced through the pack;

but now the increasing swell broke the hawsers, and rendered it impossible any longer to hold on by the floe-piece. They therefore kept company during the fog by firing guns. On the evening of the 19th the wind suddenly freshened to a violent gale from the northward; the sea rose to a fearful height, breaking over the loftiest bergs. "Soon after midnight," says Captain Ross, "our ships were involved in an ocean of rolling fragments of ice, hard as floating rocks of granite, which were dashed against them by the waves with so much violence, that their masts quivered as if they would fall at every successive blow; and the destruction of the ships seemed inevitable from the tremendous shocks they received. By backing and filling the sails, we endeavoured to avoid collision with the larger masses; but this was not always possible. In the early part of the storm, the rudder of the *Erebus* was so much damaged as to be no longer of any use; and about the same time I was informed by signal that the *Terror's* was completely destroyed, and nearly torn away from the stern-post. We had hoped that, as we drifted deeper into the pack, we should get beyond the reach of the tempest; but in this we were

mistaken. Hour passed away after hour without the least mitigation of the awful circumstances in which we were placed. Indeed, there seemed to be but little probability of our ships holding together much longer, so frequent and violent were the shocks they sustained. The loud crashing noise of the straining and working of the timbers and decks, as she was driven against some of the heavier pieces, which all the activity and exertions of our people could not prevent, was sufficient to fill the stoutest heart, that was not supported by trust in Him who controls all events, with dismay."

Although they were thus forced by the storm many miles deeper into the pack, they could not perceive that the swell had at all subsided; the ships still continued rolling and groaning amidst the heavy fragments of crushing bergs, over which the ocean rolled its mountainous waves, throwing huge masses one upon another, and then again burying them deep beneath its foaming waters, dashing and grinding them together with fearful violence. "Each of us secured his hold, waiting the issue with resignation to the will of Him who alone could preserve us, and bring us safely

through this extreme danger; watching with breathless anxiety the effect of each succeeding collision and the vibrations of the tottering masts, expecting every moment to see them give way, without our having the power to make an effort to save them." By four P.M. the force of the wind had somewhat diminished, but the squalls were as violent as ever, laying the ship over on her broadside.

"At this time the *Terror* was so close to us, that when she rose to the top of one wave, the *Erebus* was on the top of that next to leeward of her; the deep chasm between them filled with heavy rolling masses; and as the ships descended into the hollow between the waves, the main top-sail yard of each could be seen just level with the crest of the intervening wave, from the deck of the other: from this, some idea may be formed of the height of the waves, as well as of the perilous situation of our ships. The night now began to draw in, and cast its gloomy mantle over the appalling scene, rendering our condition, if possible, more hopeless and helpless than before; but at midnight, the snow, which had been falling thickly for several hours, cleared away as the wind sud-

denly shifted to the westward, and the swell began to subside."

During the night, the ships had been carried through a chain of bergs, which served to keep off the heavy pressure of the pack. In the morning, the ice was sufficiently open to admit of a survey of the damage sustained by the ships, when it was found that only the rudders had been materially injured; the other damages were of less consequence, and it was a matter of astonishment as well as satisfaction, to find that after so many hours of constant and violent thumping, both the vessels were nearly as tight as they were before the gale, so admirably had they been fortified for the service in which they were engaged.

The time was now almost incessantly employed during the next two or three days in repairing the rudder of the *Erebus*, and getting out the spare rudder for the *Terror*. A second spare rudder was also made for the latter ship, to provide against future accidents of the kind. The ships continued to drift with the pack back to the northward, and at noon on the 22d they were nearly in the same spot which they were in three weeks before. They

had now exhausted five weeks of the best part of the season of navigation in the attempt to get through this formidable pack, and with the brief remaining period of the season they could not hope to accomplish much.

On the evening of the 24th both ships were in a state of efficiency, and all sail was made on them to the southward; a floe-piece being still used as a fender between the ships. The sun had seldom been seen during this long and harassing detention in the pack, through which by the end of January they had sailed at least 800 miles; and still they were not much more than half a mile to the southward of the meridian attained by Cook, who had no occasion to enter the pack at all, so variable are the effects of season in the navigation of icy seas.

On the 31st, the ice assumed that blue, sea-worn appearance which is almost invariably noticed at the outer edge of a pack. On the evening of the 1st February the clear sea came in sight, and the edge of the pack, consisting of heavy washed pieces, formed a fearful line of foaming breakers, which it was absolutely necessary to encounter. Soon after midnight, the ships entered

the broad band of heavy ice and foam; they were much strained by the heavy shocks they received, but escaped with comparatively trifling injury. The joy of all on board in escaping from the pack, in which they had been imprisoned during fifty-six days, can scarcely be imagined. The thick falling snow limited their view to the distance of half a mile; but on the weather clearing up, they had the satisfaction of finding themselves in an almost perfectly open sea. At noon (2d February) they were in lat. 67° 57′ S., long. 160° 3′ W. At night, several stars were visible for the first time; this increase of darkness in the night indicating the approaching close of the season for navigating these seas.

They continued to sail along the edge of the pack till the morning of the 4th, when it stretched across their route to the southward, forming a deep bight in which the ships were embayed; they had therefore to beat out of it as fast as possible, and on the 5th, finding the pack again in a southerly direction, they bore away along its edge before a gale of wind. On the 16th, in lat. 75° 6′ S., and long. 187° 4′ W., they were in the open sea, no ice with the exception of two

small bergs being visible from the mast-head. The season was altogether much milder than at the same period in the previous year; but on the 20th and 21st a southerly gale blew with violence: the thermometer stood at 19°, and the waves which broke over the ships froze as they fell on the decks and rigging, accumulating a heavy weight of ice about the hull and ropes, which kept the crew constantly employed with axes, breaking it away. Whilst the people were thus engaged in the *Terror*, a small fish rather more than six inches in length was found in the mass of ice; it had most probably been dashed against the ship by a wave and instantly frozen fast. It was carefully removed for the purpose of preservation, but was unfortunately seized upon and devoured by a cat.

At noon on the 22d they were in lat. 76° 42′ S., and long. 165° 50′ W. The great barrier discovered the year before was seen about midnight. On approaching it next day its outline was found to be much more broken and indented than it was in the previous year further to the westward. The position of the barrier precluded the hope of their reaching a higher latitude that season, and

they were now only six miles in advance of their position the year before. In advancing along the barrier to the eastward it was seen from the mast-head gradually to rise to the southward, presenting the appearance of mountains of great height covered with snow, with a varied and undulating outline. There was little doubt that it really was land, but in order to guard against the possibility of mistake, Captain Ross enters it on the chart only as an "appearance of land."

The young ice was now so much strengthened by the cold at midnight, (18°,) that there was considerable difficulty in forcing the ships through it. The surface of the sea now presented one unbroken sheet of ice as far as the eye could reach, threatening to freeze the ships up for the winter in a dangerous position. Fortunately, however, a strong breeze came on, which enabled them to bore through the young ice under all sail; and after running about thirty miles they were once more in clear water.

The setting in of the winter now required them to quit the Antarctic regions. The tedious detention in the pack had wasted the best part of the season. Still, however, they had done something; they had

attained a somewhat higher latitude than in the previous year, and had traced the continuation of the barrier ten degrees of longitude further to the eastward, and had extended their researches over a large portion of the hitherto unexplored parts of these regions. The order was therefore given to run to the northward along the pack edge to seek for an opening which might lead them to the Falkland Islands, where it was proposed to winter and refit the ships, before making a third effort to gain a high southern latitude in the meridian of 35° west longitude, where Weddell had but little difficulty in pushing beyond the seventy-fourth degree.

They continued sailing along the pack edge till the 28th, when in lat. 70° 54′ S., and long. 175° 36′ W., they came upon an extensive chain of icebergs so close together that no way could be seen through them. The ships were therefore obliged to haul to the south-westward. On the morning of the 1st of March, the bergs were again seen extending in an unbroken chain to the northward as far as the eye could reach from the mast-head. The pack edge was observed stretching several miles to the westward of the bergs. It

consisted of the heaviest masses of ice, of a deep blue colour, and much worn and rounded by the action of the sea. The ships got clear of these bergs, and on the 9th reached the latitude of 60° 20′ S. From this time to the 12th they made rapid progress to the eastward, having met only four or five bergs during a run of several hundred miles. On the afternoon of this day, however, several were seen during thick weather. At this time the ships were running under all the sail they could carry to a strong north-westerly breeze. In the evening the wind increased, and snow fell fast, so that it was necessary to shorten sail. "Numerous small pieces of ice were also met with," says the Captain, "warning us of the presence of bergs, concealed by the thickly falling snow. Before midnight I directed the top-sails to be close-reefed, and every arrangement made for rounding-to until daylight, deeming it too hazardous to run any longer. Our people had hardly completed these operations when a large berg was seen ahead, and quite close to us; the ship was immediately hauled to the wind on the port tack, with the expectation of being able to weather it; but just at this moment the *Terror*

was observed running down upon us, under her topsails and foresail; and as it was impossible for her to clear both the berg and the *Erebus*, collision was inevitable. We instantly hove all aback to diminish the violence of the shock; but the concussion, when she struck us, was such as to throw almost every one off his feet; our bowsprit, topmast, and other smaller spars, were carried away, and the ships hanging together, entangled by their rigging, and dashing against each other with fearful violence, were falling down upon the weather face of the lofty berg under our lee, against which the waves were breaking and foaming to near the summit of its perpendicular cliffs. Sometimes she rose high above us, almost exposing her keel to view, and again descended as we in our turn rose to the top of the wave, threatening to bury her beneath us, whilst the crashing of the breaking upper works and boats increased the horror of the scene. Providentially they gradually forged past each other, and separated before we drifted down amongst the foaming breakers; and we had the gratification of seeing her clear the end of the berg, and of feeling that she was safe. But she left us completely disabled;

the wreck of the spars so encumbered the lower yards, that we were unable to make sail, so as to get headway on the ship; nor had we room to wear round, being by this time so close to the berg that the waves, when they struck against it, threw back their sprays into the ship. The only way left to us to extricate ourselves from this awful and appalling situation was by resorting to the hazardous expedient of a stern-board, which nothing could justify during such a gale, and with so high a sea running, but to avert the danger which every moment threatened us of being dashed to pieces. The heavy rolling of the vessel, and the probability of the masts giving way each time the lower yards struck against the cliffs, which were towering high above our mast-heads, rendered it a service of extreme danger to loose the mainsail; but no sooner was the order given than the daring spirit of the British seaman manifested itself: the men ran up the rigging with as much alacrity as on any ordinary occasion; and although more than once driven off the yard, they after a short time succeeded in loosing the sail. Amidst the roar of the wind and sea, it was difficult both to hear and to execute the orders

that were given; so that it was three quarters of an hour before we could get the yards braced bye, and the maintack hauled on board sharp aback—an expedient that perhaps had never before been resorted to by seamen in such weather: but it had the desired effect; the ship gathered sternway. Plunging her stern into the sea, washing away the gig and quarter boats, and with her lower yard-arms scraping the rugged face of the berg, we in a few minutes reached its western termination; the "under-tow," as it is called, or the reaction of the water from its vertical cliffs, alone prevented us being driven to atoms against it. No sooner had we cleared it, than another was seen directly astern of us, against which we were running; and the difficulty now was to get the ship's head turned round and pointed fairly through between the two bergs, the breadth of the intervening space not exceeding three times her own breadth. This, however, we happily accomplished; and in a few minutes after getting before the wind, she dashed through the narrow channel, between two perpendicular walls of ice, and the foaming breakers which stretched across it, and the next moment we were in smooth water under its lee."

The *Terror's* signal light was immediately seen and answered, thus relieving the anxiety of her people as to the fate of her companion. The lee of the berg now afforded an invaluable protection from the fury of the storm; and the people in the *Erebus* exerted themselves to clear away the wreck of the broken spars, and to prepare others to replace them. The *Terror* had suffered no serious damage by the collision.

While the ships were to windward of the berg, a remarkable display of the Aurora Australis was observed. Its bright light formed a range of vertical beams along the top of the icy cliff, marking and partaking of all the irregularities of its figure, suggesting some connexion between this light and the vaporous mist thrown upwards by the dashing of the waves against the berg.

The following day being Sunday, the crews of both ships assembled together to offer up their thanksgivings and praises to Almighty God, for the renewed instance of His guidance and protection which they had so recently experienced.

On the 6th April, the ships arrived in safety at the Falkland Islands.

On the 17th December, 1842, the *Erebus* and the *Terror* sailed from Port Louis in the Falkland Islands, upon a third visit to the Antarctic regions. On this occasion the meridian of 55° W. was selected, in expectation of meeting with a continuation of Louis Philippe's Land; and by following the coast line to the south-eastward, keeping between the land and the pack, it was hoped to be able to combine the survey of its shores with the attainment of a high latitude. If any obstacle should oppose this attempt, it was determined to follow the track of Weddell, who reached the latitude of 74° 15′ S., where from his account it was expected to find a clear sea, and considerably extend the limit of his researches.

On the morning of the 24th, the first iceberg was seen in lat. 61°. Christmas-day was passed happily and cheerfully, although the gale whistled through the rigging, and the ships were surrounded by numerous icebergs. The crews enjoyed the good old English fare of roast-beef, which had been provided by Governor Moody of the Falkland Islands, who had presented each ship with a fine fat ox, which had been fed on the celebrated tussock grass for this especial occa-

sion. In the afternoon, they sailed through several streams of loose ice, and soon afterwards the main pack was seen from S.S.W. to E. This was in lat. 62° 30′ S. and long. 52° W. The pack appeared tolerably open; but as it was an object to get between it and the land to the westward, they did not venture so far as to endanger the vessels getting beset in so exposed a situation. On the 27th, the temperature of the air was 37°, and that of the sea 34°, and many of the icebergs were rapidly breaking up, producing loud reports and crashes, as they split and rolled over. This was an unusual sight to our navigators, for, on their two former visits to the southern regions, they had never seen the least appearance of thaw or breaking up of the bergs. On the 28th land was discovered. It appeared to be a remarkable cape, with a deep indentation to the northward of it, having the appearance of a good harbour, and terminated by a less conspicuous headland. Still further to the northward, and at a great distance, another promontory was clearly seen, which was believed to be D'Urville's "Point des Français." The summit of the highest land to the southward exposed to view, as the mist cleared away, an even

round-topped mountain covered with snow, from which projected two warty excrescences of rock free from snow. A high islet of extraordinary figure was seen at a great distance from the shore. It was named *Ætna Islet*, from its resemblance to that volcano. An enormous glacier, several miles broad, descended from an elevation of about 1,200 feet into the ocean, where it presented a vertical cliff of about 100 feet in height, near which was an immense collection of icebergs, which had evidently broken away from it.

The ships now proceeded southward along a coast line of icy cliffs, in a sea thickly studded with grounded bergs, among which a strong tide or current formed whirlpools, which rendered navigation difficult, and hurried the ships towards numerous low rocky islets concealed among heavy fragments of ice. These were named *Danger Islets*, and fortunately the ships escaped them. The next day the southernmost of this group, a small high island, was named *Darwin Islet*. Numerous black whales of the largest size were seen; they were so tame, that the ship sometimes almost touched them before they moved out of the way. Thus within ten days after leaving the Falkland

islands, not only had new land been discovered, but also a valuable whale-fishery less than 600 miles from one of the British possessions.

At noon, on the 30th, they were in lat. 63° 36′ S., long. 54° 33′ W. The main-land was seen bearing from W.N.W. to S.S.W. They stood towards the land until midnight, when it was clearly made out as far to the southward as south-west. It was entirely covered with snow, except in a few places where perpendicular cliffs, upon which it could not lodge, broke through the mountain glacier, and first arrested the attention of the observer. The summit of the mountain to the northward terminated in two remarkable peaks, 3,700 feet above the sea level. It was named *Mount Percy*, after the commander-in-chief of the Cape of Good Hope station, to which these newly discovered lands belong. The high bold cape, forming the south extremity of the island upon which Mount Percy rises, was named *Cape Purvis*, and an island near it, *Paulet Island*. The latter rises 750 feet above the sea, and its cliffs appear quite inaccessible. Other islets, capes, and points, were also named. A wide and deep islet to the *north*-west, in which were numerous high, conical,

and crater-shaped islets, seemed to indicate a passage between Joinville Land and Louis Philippe Land into Bransfield Straits. The low western termination of the land was named *Point Bransfield.* The land from this point is quite flat for a great distance from the shore towards Mount Percy; and near the centre of this extensive snow-covered plain, a very remarkable tower-shaped rock rises to a conspicuous height, which was probably seen by D'Urville from the northward at a greater distance, as it is marked on his chart as a "supposed island," the low land upon which it stands not being visible at so great a distance. It was named *D'Urville's Monument,* in memory of that enterprising navigator, whose loss not only France, but every civilized nation must deplore."*

On the 31st they were in lat. 64° S., long. 55° 28′ W., the southern extremity of the land bearing S. 54° W. at a distance of thirty miles,

* Admiral D'Urville, and his wife and son, were victims of the terrible railway accident which occurred between Paris and Versailles in the spring of 1842. It will be remembered, as a touching incident, that the enterprising navigator gave the name (Adèle) of his wife to the coast line (Adélie), amidst dangers which often rendered it probable they might never meet again.

and a lofty table-topped mountain bearing about west. The ice was so closely packed that they could not get nearer to the coast on this point. On New-year's-day, 1843, the weather was perfectly calm, and they had a most beautiful view of the magnificent mountain which formed the most striking feature in the new discoveries. It was named *Mount Haddington.* It was found to be 7,050 feet high. It rose precipitously from the coast in three horizontal volcanic terraces, the black rocky cliffs protruding through the icy covering of the mountain. A small island of a deep brown colour, of great elevation for its size, with a rock resembling a watch-tower on its north point, and a high volcanic crater-like peak on its south end, being perfectly clear of snow, formed a striking contrast to the main-land. It was named *Cockburn Island,* and was found to rise 2,760 feet above the sea. On the 5th January the loose ice from the islets and coast drifted away, leaving the shores of this island quite clear. A party, therefore, landed, and took possession. It proved to be entirely of volcanic formation; but the most interesting fact was, that the last vestiges of vegetation were found on this barren rock. Nineteen

species belonging to the orders *Mosses*, *Algæ*, and *Lichens*, were found. The cliffs were belted with a yellow lichen, which prevails in the vicinity of the sea throughout the Antarctic islands. "It grows nowhere else in such profusion; a circumstance which may arise from its preference for animal matter; the penguin rookery of Cockburn Island, which taints the air by its effluvium, being, perhaps, peculiarly congenial to this lichen." The mosses grow in the soil in the fissures of the rocks: they are excessively minute, and require the closest scrutiny to detect them. They were so hard frozen to the ground as to require a hammer for their removal. The sea-weeds were all floating, and carried along by a strong current, loaded with masses of ice. Among birds, penguins and cormorants were innumerable, and the beautiful white petrel had its nest in the precipitous cliffs. The eggs of this bird, which had never before been examined, are two inches one-fifth long, of a bluish white colour; and only one egg, with the young in a forward state, was found in each nest, which was formed of a few feathers on the bare rock.

A strong flood tide from the northward carried

the ships some distance up the inlet, between Cockburn Island and the main land. This arm of the sea, which was named *Admiralty Inlet*, is terminated at about twenty miles from its entrance by a glacier, which seems to connect the opposite shores. Several capes, headlands, and bays, seen in the inlet, were named after some of the lords of the Admiralty. The south-west land in the inlet, for about ten miles, "is formed of deep brown-coloured lava with a polished surface, contorted and grooved in so extraordinary a manner, as to give it the appearance of having been marked by machinery in numerous series of lines, somewhat resembling the engine-turning of a watch-case, but more irregular." The snow-covered land rises gradually to the southward to an elevation of about 2,000 feet. It was named *Snow Hill*. The western coast of the inlet is formed of perpendicular cliffs of basaltic rock.

The ships were carried out of the inlet on the turn of the tide, and bore away before a fresh breeze to the S.S.W. between a continuous line of grounded bergs and the land. At noon, on the 7th, they were in lat. 64° 34′ S., long. 57° 10′ W., *when the land*, or rather its facing of icy cliffs,

was observed to turn suddenly away to the westward. Bergs of enormous size, from four to five miles in diameter, and about 200 feet high, were clustered together in the fixed ice. On advancing to the southward two high rugged bluff capes were seen at a distance.

The ships were hampered on the 8th by icebergs, but succeeded in getting clear of them by means of towing; they were also detained by fog and snow showers, but by the 12th they succeeded in tracing the ice in one unbroken line for nearly thirty miles, when it was found to turn suddenly to the north, and join the icy cliffs at the foot of Snow Hill. As it was impossible to continue the examination of the land to the westward, or to make any way to the southward, it was determined to trace the land ice to the south-eastward as far as possible; but in order to do this it was necessary to get clear of the loose ice, which had now packed so closely in among the bergs that no way could be seen out, and the temperature at night falling to 23°, began to connect them into extensive floes, threatening to freeze up the ships. On the 14th, the main pack continuing to press against the grounded bergs, it was determined to run the

ships into the ice, and endeavour to heave them through it. Accordingly they entered the pack with a favourable wind, and continued, during eight hours, warping, heaving, and boring through it, until it became so close that the ships could not be moved another inch. The ice slackened a little with the turn of the tide, and the ships were moved forward, but in the evening of the 15th the ice appeared everywhere most closely packed; and its pressure against the land was so great as to heel the ships over considerably, and make their timbers crack. On the 16th the floe to which the ships were made fast struck against a grounded berg, broke up into many pieces, one of which carried the *Terror* off to a distance of several miles, the tide sweeping away the ships in different directions, although it was impossible to move the ships their own length, so closely were they beset in the packed ice. On the 17th the ships again made fast to a floe, which, together with the whole body of ice, drifted with the tide to the southward; but fortunately the floe was stopped by a grounded berg, while the rest of the pack continued its progress with much rapidity; and before the tide *was done,* clear water was seen to the northward

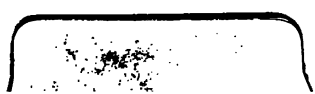
over the pack, which, after much exertion, was happily gained.

All attempts to advance further to the southward were in vain, the pack carrying the ships to the northward faster than they could warp or work through it; accordingly, on the 4th of February, they got clear of it altogether, and began to trace its edge to the eastward. This was done during many successive days, but no opening was seen in it by which they could penetrate to the southward. On the 14th they crossed Weddell's track, in lat. 65° 13′ S.; "but under what different circumstances!—he was in a clear sea, we found a dense impenetrable pack; and, as Admiral D'Urville was unable to attain even to the 64th degree, we must conclude that Weddell was favoured by an unusually fine season, and we may rejoice that there was a brave and daring seaman on the spot to profit by the opportunity."

They continued, during several days, to examine the edge of the pack; and on the 5th of March, finding it to be open, they ran the ships into it as far as could be done with prudence; but after penetrating about twenty-seven miles, it was found so close and heavy, that they were obliged

to endeavour to work out again. When at the farthest they were in lat. 71° 30′ S., long. 14° 51′ W.; a cask was then thrown overboard containing a paper signed by Captain Ross and all the officers, stating the fact.

Signal was now made to the *Terror* to proceed to the Cape of Good Hope. Having hoisted their colours, they began to retrace their steps, and before dark regained the clear water. A gale of wind now came on, which lasted, more or less, during several days, exposing the ships to considerable danger from the numerous icebergs. During the first night of the gale the masts, though aided by additional supports, quivered to every sea that broke over the ship; and the sprays, freezing as they fell upon the rigging and decks, rendered it difficult to work the ropes, while the extreme darkness of the night caused continual apprehension of collision with some of the bergs, which at times it seemed almost impossible to avoid. Captain Ross remarks, "It was a night of deep anxiety to us all; and the necessary degree of composure and peace of mind required to meet it could only result from a firm reliance upon the guidance and *protection of* Almighty God, who had preserved *us under* equally perilous circumstances."

At length, however, they escaped from all their perils and difficulties, and arrived at the Cape on the 4th of April, when the brave commander had the proud satisfaction of reporting that the expedition had returned for a third time from the arduous service in which it had been engaged, without a single individual of either of the ships on the sick list.

LONDON :
R. CLAY, PRINTER, BREAD STREET HILL.